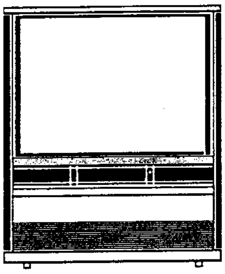
PIONEER
The future of sound and vision.

Service Manual



ORDER NO.
ARP1870

PROJECTION MONITOR RECEIVER

SD-P403-G
SD-P403-K

MODELS SD-P403-G AND SD-P403-K HAVE FOLLOWING VERSIONS :

Type	Applicable model (Appearance is indicated in the ( ).)		Power requirement	Export destination
	SD-P403-G (Gray cabinet)	SD-P403-K (Black cabinet)		
KUX1C	○	○	AC 120V only	U. S. A
KCX1C	○	—	AC 120V only	Canada

- This manual is applicable to the SD-P403-G/KUX1C, KCX1C and SD-P403-K/KUX1C types.
- As to the SD-P403-G/KCX1C and SD-P403-K/KUX1C types, refer to page 100.
- This manual is combined with operating instructions (from page 101).

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IFO AUG. 1989 Printed in Japan

You must read the SAFETY PRECAUTIONS, the PRODUCT SAFETY NOTICE and the CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION befor servicing.

1. SAFETY PRECAUTIONS

NOTICE : Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

The following precautions should be observed :

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People who do no wear them should be kept away while picture tubes are handled.
   Keep picture tube away from the body while handling.
2. When service is required, even though the SD-P403-G, an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress.
   Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components.
   Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing.

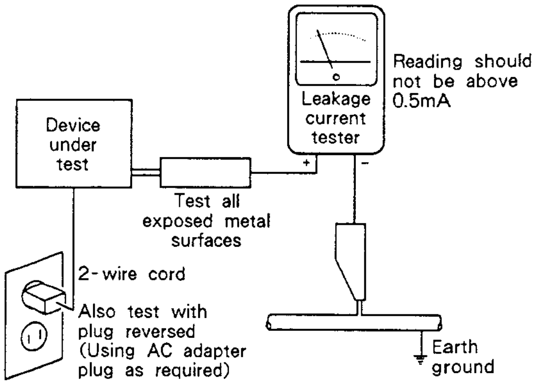
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (input/output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3MΩ and a maximum resistor reading of 5MΩ. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (Do not use an isolation transformer for this check). Turn the AC power switch on. Using a "Leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (input/output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

High Voltage

This set is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.

SERVICEMAN WARNING

> High voltage (31.8kV) will remain at anode of the picture tube for a long period after turning power off even more than one or two weeks.
> In this state, it will be really dangerous if any kind of operation which has a risk of electric shock at anode is carried out ; such as replacement of the picture tube (CRT assembly R, G, B) or exchanging and removing an anode cable.
> When these kinds of operations are required be, sure to discharge anode voltage following the procedure of "Discharge of anode voltage", page 6.

X-ray radiation

TUBE : The primary source of X-ray radiation in this set is the picture tube.
For continued X-ray radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.
The picture tube (CRT assembly R, G, B) used in this set holds complete guarantee against X-ray radiation when the X-ray is sealed (See on page 5). Accordingly, when the current in flowing to the picture tube (CRT assembly R, G, B), be sure to perform it by putting the tube into X-ray sealed applied state. Never supply the current to the picture tube (CRT assembly R, G, B) without having X-ray sealed. Moreover, when the voltage of the high voltage circuit becomes higher above the normal range, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit, be sure to replace as an assembly with the DEFLECTION assembly (AWV1080) in the manner in which has been adjusted to perform normal operation.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER sets have special safety related features and characteristics. These features often do not become evident upon visual inspection nor the protection afforded by them, necessarily, can be obtained by using replacement components rated even for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified with ⚠ and ☆ marks on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create a risk of shock, fire, X-ray radiation, or other hazards. Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the most current PIONEER Service Manual. A subscription to, or additional copies of PIONEER Service Manuals may be obtained at a nominal fee from PIONEER.

3. CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION

■ Charged section

The circuit in which the commercial AC power is used as it is without passing through the power supply transformer. If the charged section is touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. In this case, be sure to connect the set via an insulated transformer and supply the current.

■ Charged section (Power supply primary side)

1. The primary side of the DEFLECTION assembly	AWV1080
2. AC power cord	ADG1056
3. R1, R2 wire-wound resistor (0.47/20W)	ACN1058

⋮ part is the charged section.

▨ part is the high voltage generating points other than the charged section.

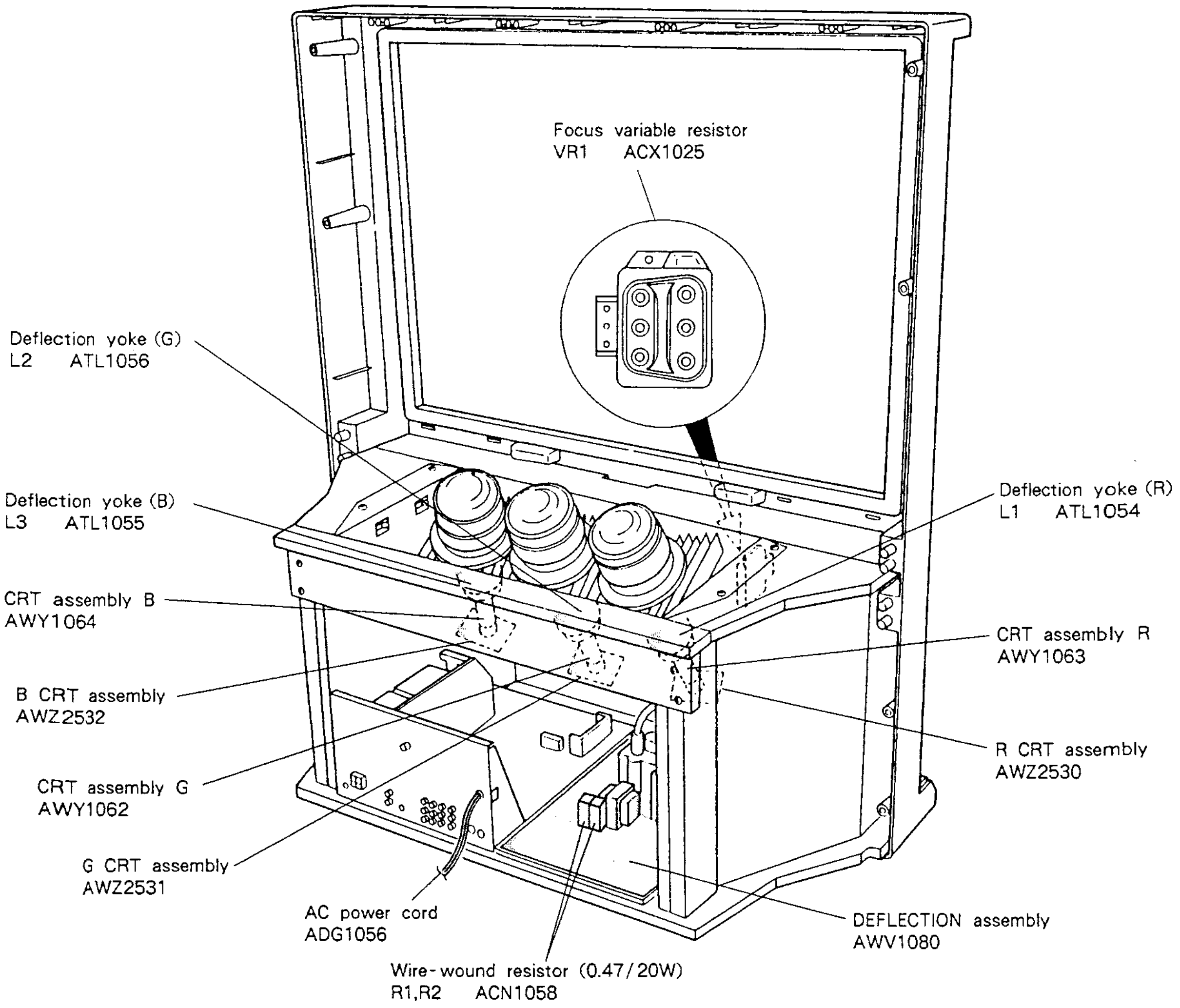

Focus variable resistor
VR1 ACX1025
Deflection yoke (G)
L2 ATL1056
Deflection yoke (B)
L3 ATL1055
CRT assembly B
AWY1064
B CRT assembly
AWZ2532
CRT assembly G
AWY1062
G CRT assembly
AWZ2531
AC power cord
ADG1056
Wire-wound resistor (0.47/20W)
R1,R2 ACN1058
DEFLECTION assembly
AWV1080
Deflection yoke (R)
L1 ATL1054
CRT assembly R
AWY1063
R CRT assembly
AWZ2530

Fig. 3-1 Charged section and high voltage generating point

■ High voltage generating point

The place where voltage of over 100V is generated.

1. Charged section
2. DEFLECTION assembly (including FBT)
   AWV1080 (31.5kV, 135V)
3. R CRT assembly
   AWZ2530 (10.5kV)
4. G CRT assembly
   AWZ2531 (10.5kV)
5. B CRT assembly
   AWZ2532 (10.5kV)
6. CRT assembly R
   AWY1063 (31.5kV)
7. CRT assembly G
   AWY1062 (31.5kV)
8. CRT assembly B
   AWY1064 (31.5kV)
9. Focus variable resistor (VR1)
   ACX1025 (10.5kV)
10. Deflection yoke
    ATL1054 (L1 : R)
    ATL1056 (L2 : G) (Approx. 1200V at peak)
    ATL1055 (L3 : B)

■ X−ray protection

- ● Regarding the parts which are relative to radiation of X-rays (There is the danger to radiate X-ray from the individual CRT assembly R, G, B), there are notifications of caution in the individual schematic diagrams. Be sure to read them for safety's sake.
- ● The component parts for X-ray protection are as follows : When the current flows to the CRT assembly R, G, B, be sure to perform it with these parts being attached. Protection from the X-ray radiation is maintained in the state in which these parts have been installed to the CRT assembly R, G, B. Accordingly, never supply current only to the CRT assembly R, G, B.
  Moreover, the anode voltage of the CRT assembly R, G, B should always be kept not higher than the predetermined value (in the minimum brightness and picture state when non signal input is higher than 31.8kV). Be sure to drive the CRT assembly R, G, B by using a completely functional DEFLECTION assembly (AWV1080) which has been adjusted completely in the combined state. (When the voltage abnormally becomes high, the X-ray protection circuit will operate.)

1. CRT assembly R, G, B (Do not dismantle CRT assemblies under any circumstances).
2. Lens assembly 40 (GB), (R)

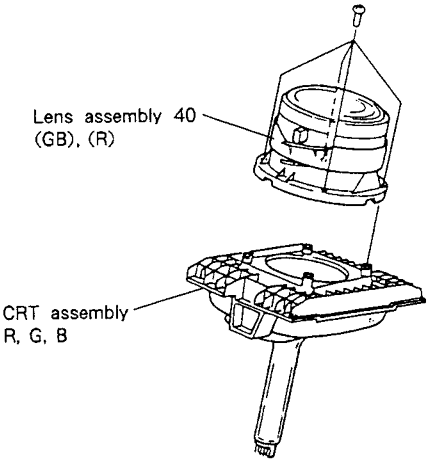


Fig. 3-2 Component parts for X-ray protection

4. DISCHARGE OF ANODE VOLTAGE

1. Turn off the POWER switch, and disconnect the AC power cord from the AC outlet for safety.
2. Disconnect the connector M2 in the R CRT assembly. (In order to protect power supply circuit for the heater.)
3. Apply the direct current (either + or −) of 6.3V and over 690mA between the HT + and HT − terminals in the B CRT assembly.
4. After more than 30 seconds have elapsed, short-circuit the TP-GK and GND terminals in the G CRT assembly. If the anode voltage has been left high, the center of the picture glows in circle, and goes off gradually. (Repeat steps 1 to 4, and the anode voltage of approx. 30 kV will drop to aprrox. 10 kV.)
5. Remove the anode cable from the flyback transformer (T553) as shown in Fig. 4-2. Be careful not to touch your hand or a part of your body to the tip of the anode cable.
6. Short-circuit the tip of the anode cable to the meshed wire portion of the CRT Assembly (or to the earth terminal screw to which the CRT Assembly is attached).
7. Connect the anode cable to the flyback transformer (T553) again for discharge the remain-high voltage in the flyback transformer.
8. Repeat steps 5 to 7 over three times, complete discharge of anode voltage.

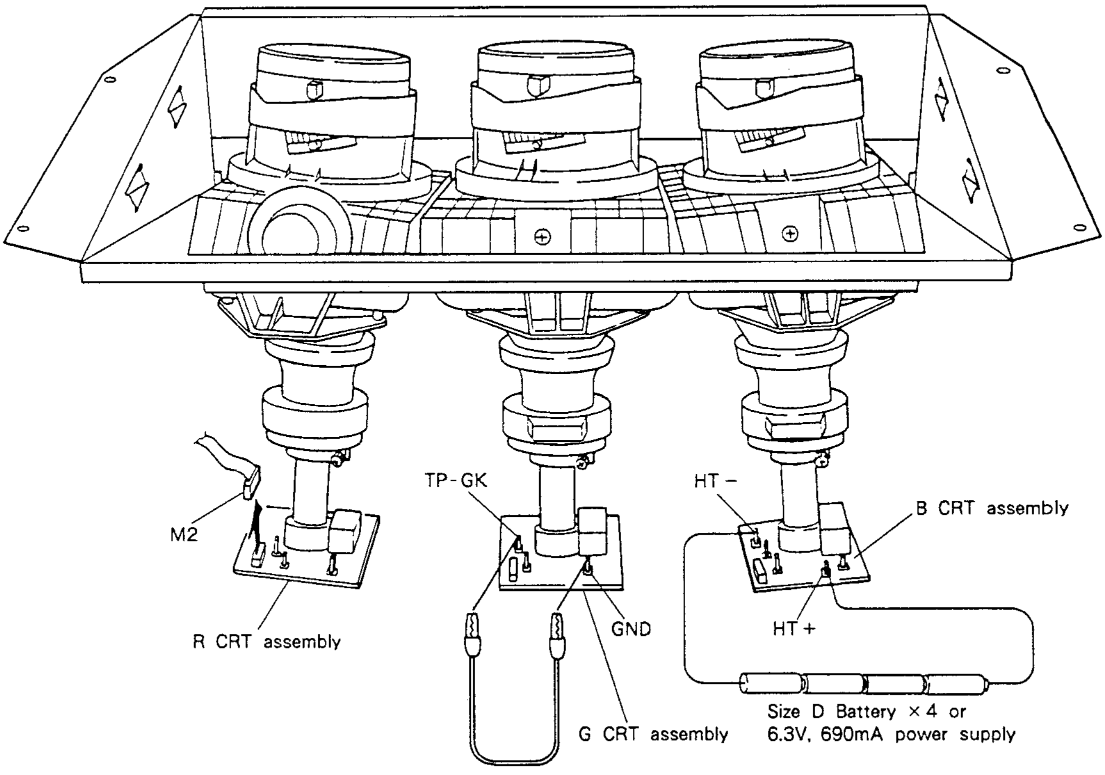


Fig. 4-1 Discharge of anode voltage (1)

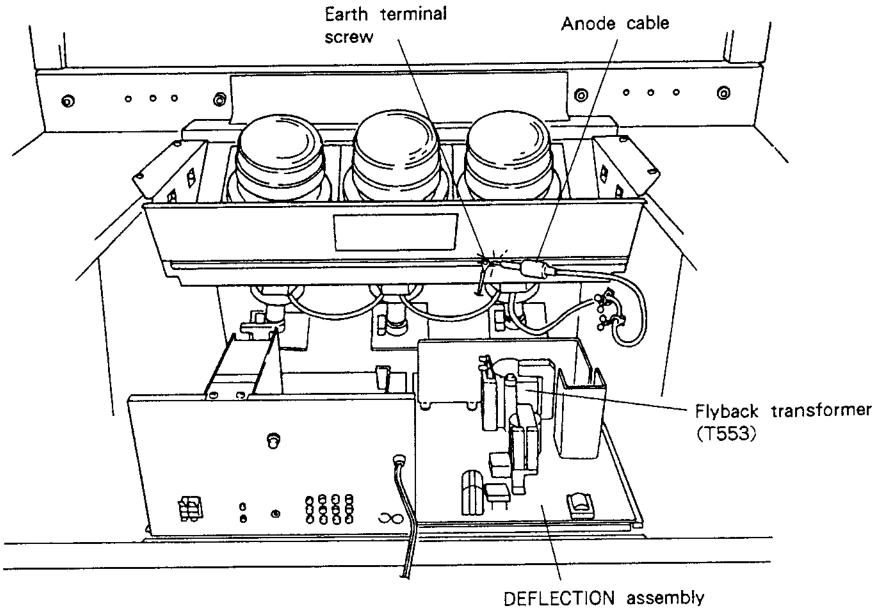


Fig. 4-2 Discharge of anode voltage (2)

5. HOW TO CLEAN

Note : Avoid fingerprints on the optical system parts such as the lens and mirror so be sure not to hold them with rear hand.

5.1 HOW TO CLEAN LENS AND MIRROR

When cleaning the lens and mirror, use the following specified cloth.

Cleaning cloth····SAVINA MINIMAX (Manufactured by Kanebo Textile (Co LTD), etc.

1. Be sure to remove sand dust with an air brush, etc.
2. When it is stained slightly, breathe upon it and wipe away with the specified cleaning cloth.
   For other stains than the above, wipe the stains away with the specified cloth into which a cleaning liquid has been soaked.

Cleaning liquid······LENS LUSTER (Manufactured by Edmund Scientific Co.), etc.

5.2 HOW TO CLEAN SCREEN

When cleaning the screen, use a soft cloth so as not to damage the screen.

1. Wipe the stain away with a diluted neutral detergent soaked cloth.
2. Wipe the detergent away with a water soaked cloth.
3. Wipe the screen with a dry cloth to remove moisture on the screen.

Note : Absolutely do not use alcohol, benzine, thinner, etc. for cleaning in order not to wipe away the black print on the surface.

6. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES :

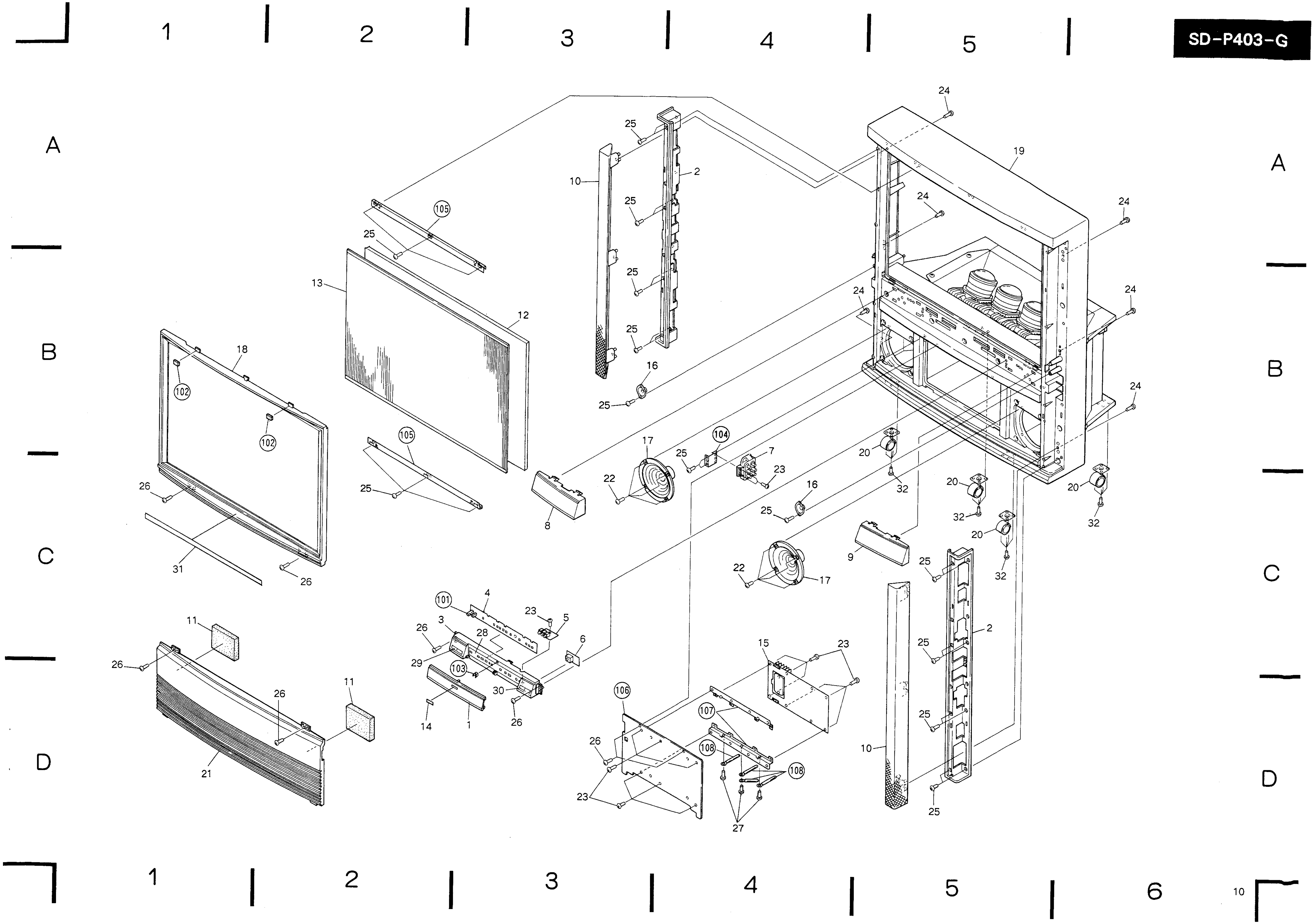
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- Parts marked by ☆ are important parts which use X – rays.
  If any of these parts need to be replaced, always replace with specified parts.

6.1 FRONT VIEW

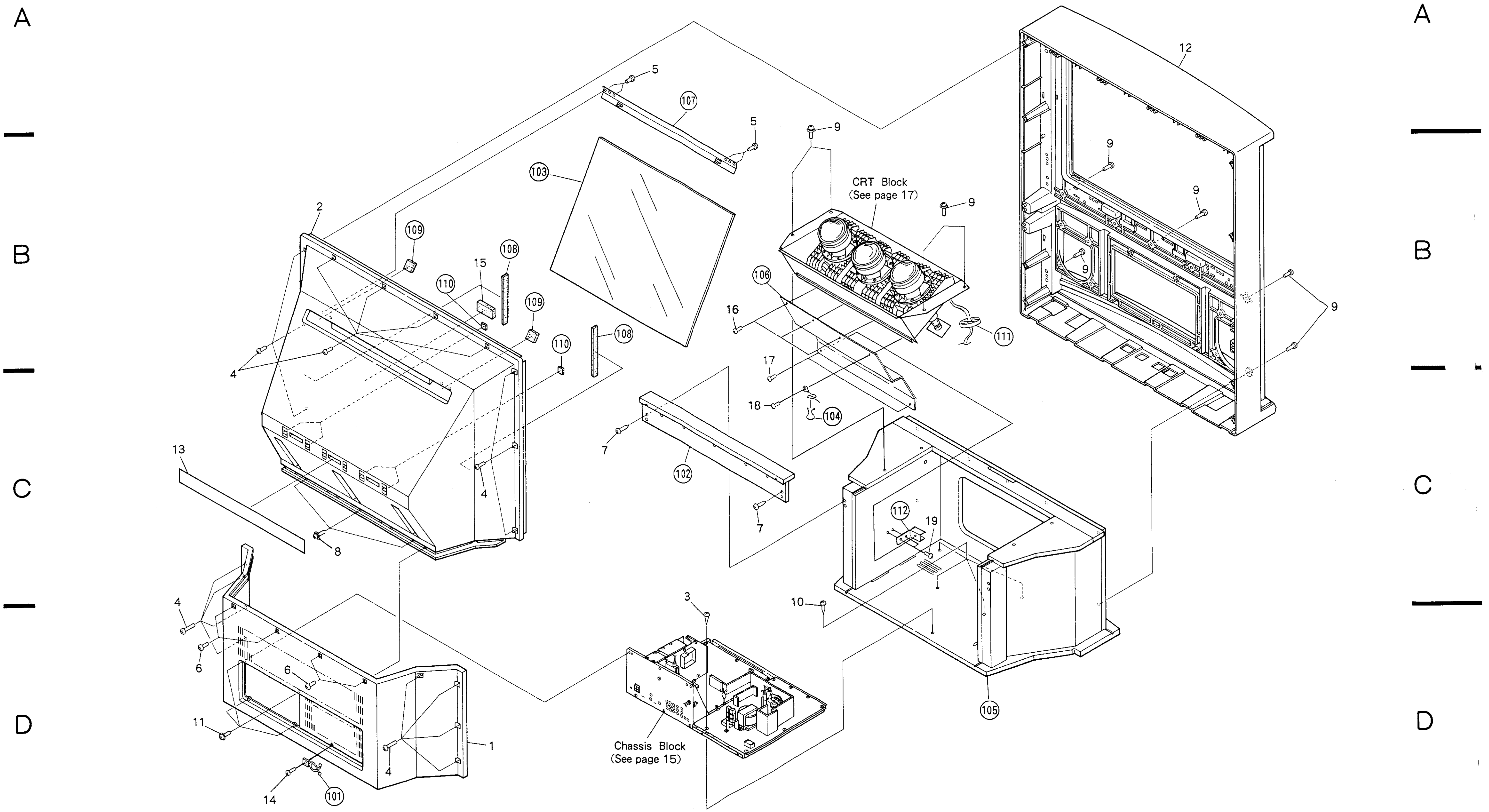
Parts List

Mark	No.	Part No.	Description
	1	AAN1122	Door
	2	AMB1488	Side grille
	3	AMB1475	Front panel
	4	AWZ2539	FRONT CONTROL assembly
	5	AWZ2542	FRONT INPUT TERMINAL assembly
	6	AWZ2541	RECEIVER assembly
⚠	7	ACX1025	Focus variable resistor (VR1)
	8	AMB1476	Side panel L
	9	AMB1477	Side panel R
	10	AMR1722	Side SP net
	11	AEC1186	Grille cushion
	12	AMR1705	Fresnel lens
	13	AMR1708	Lenticular sheet
	14	AAM1033	Badge
	15	AWZ2626	CONVERGENCE assembly
	16	APT1003	Speaker (High range)
	17	APV1013	Speaker (Mid-low range)
	18	AMB1455	Screen frame
	19	AMB1515	Front cabinet assembly
	20	AMR1256	Caster
	21	AMB1470	Grille
	22	BYC35P160FZK	Screw
	23	BBZ30P080FZK	Screw
	24	VPZ40P200FZK	Screw
	25	BPZ30P100FZK	Screw
	26	VPZ40P120FMC	Screw
	27	VCZ30P060FMC	Screw
	28	AAK1704	Plate A
	29	AAK1705	Plate B
	30	AAK1706	Plate C
	31	AAK1707	Plate D
	32	ABA1081	Screw

Mark	No.	Part No.	Description
	101		LED holder
	102		SF spacer
	103		Catcher
	104		VR holder (40)
	105		Screen holder
	106		Blind plate
	107		Stay
	108		Binder


A
B
C
D

6.2 REAR VIEW


A
B
C
D
5
(107)
5
9
(103)
CRT Block
(See page 17)
9
12
9
9
2
(109)
(108)
15
(110)
(109)
(106)
9
9
16
(111)
(108)
(110)
4
17
18
(104)
7
(102)
13
4
7
(112)
19
8
3
10
4
6
6
(105)
11
1
4
14
(101)
Chassis Block
(See page 15)
A
B
C
D

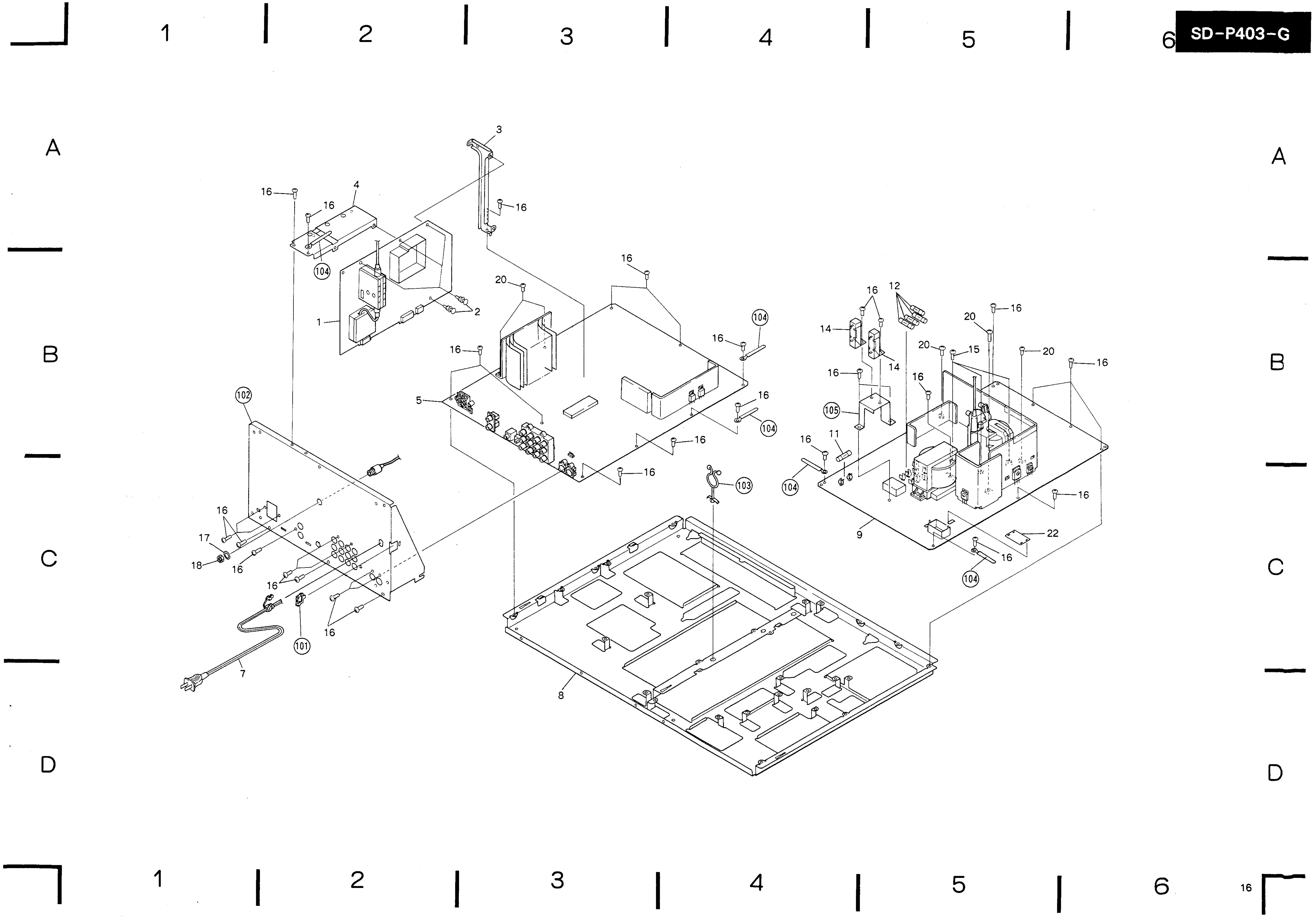
Mark	No.	Part No.	Description
	1	AME1036	Rear cover
	2	AME1037	Mirror case
	3	BYC35P160FZK	Screw
	4	VPZ40P200FZK	Screw
	5	ABA1069	Screw
	6	VPZ40P160FZK	Screw
	7	ABA1096	Screw
	8	PMB40P200FZB	Screw
	9	PMB50P250FZB	Screw
	10	ABA1038	Screw
	11	ABZ30P120FZK	Screw
	12	AMB1515	Front cabinet assembly
	13	AEC1170	Rear sheet
	14	BBZ30P080FZK	Screw
	15	AEC1187	Mirror case cushion
	16	BBZ30P080FZK	Screw
	17	ABA1085	Screw
	18	VBT30P080FZK	Screw
	19	BYC35P120FZB	Screw

Mark	No.	Part No.	Description
	101		Cable clip
	102		Shield plate
	103		Mirror
	104		Purse lock S
	105		Pallet
	106		Shield plate
	107		Mirror holder
	108		Cushion sheet C
	109		Cushion sheet B
	110		Cushion sheet A
	111		Anode clamper
	112		Holder

6.3 CHASSIS BLOCK

Mark	No.	Part No.	Description
	1	AWE1136	TUNER assembly
	2	AEC-441	Rivet
	3	ANG1405	P. C. B angle
	4	ANG1373	P. C. B holder
	5	AWV1078	VIDEO assembly
	6		• • • • • •
⚠	7	ADG1056	AC power cord
	8	ANA1095	Chassis
☆	9	AWV1080	DEFLECTION assembly
	10		• • • • • •
⚠	11	AEK1002	Fuse (8A/125V, FU651)
⚠	12	AEK1018	Fuse (4A/125V, FU652,FU655,FU656,FU658)
	13		• • • • • •
⚠	14	ACN1058	Wire wound resistor (R1,R2)
	15	VBZ30P200FMC	Screw
	16	BBZ30P080FZK	Screw
	17	WAX0F160N100	Washer
	18	ABN-087	Nut
	19		• • • • • •
	20	ABA1088	Screw
	21		• • • • • •
	22	ANH1213	Shield cover

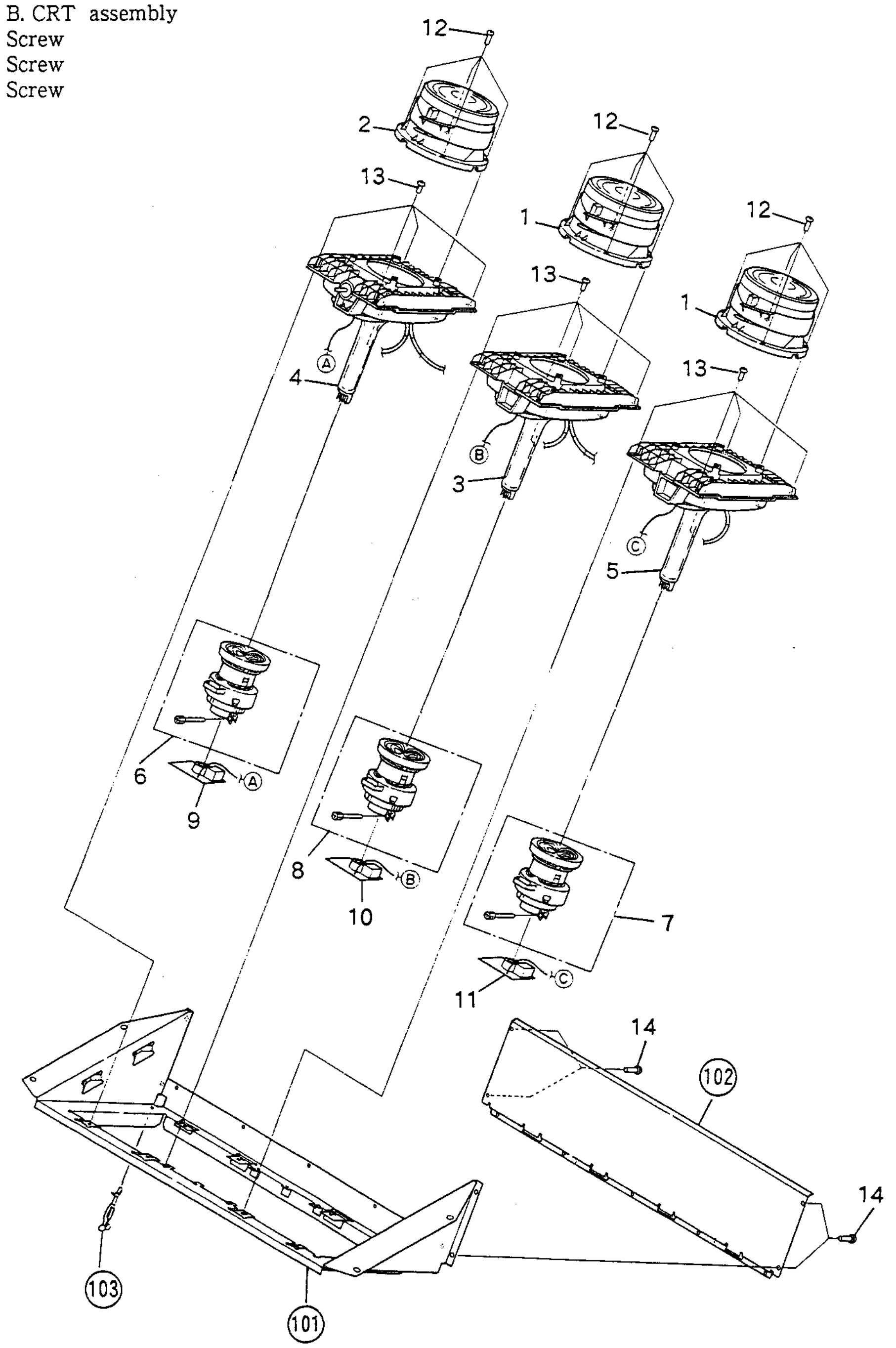
Mark	No.	Part No.	Description
	101		Cord holder
	102		Rear panel
	103		Cable clip
	104		Binder
	105		Holder


A
B
C
D

6.4 CRT BLOCK

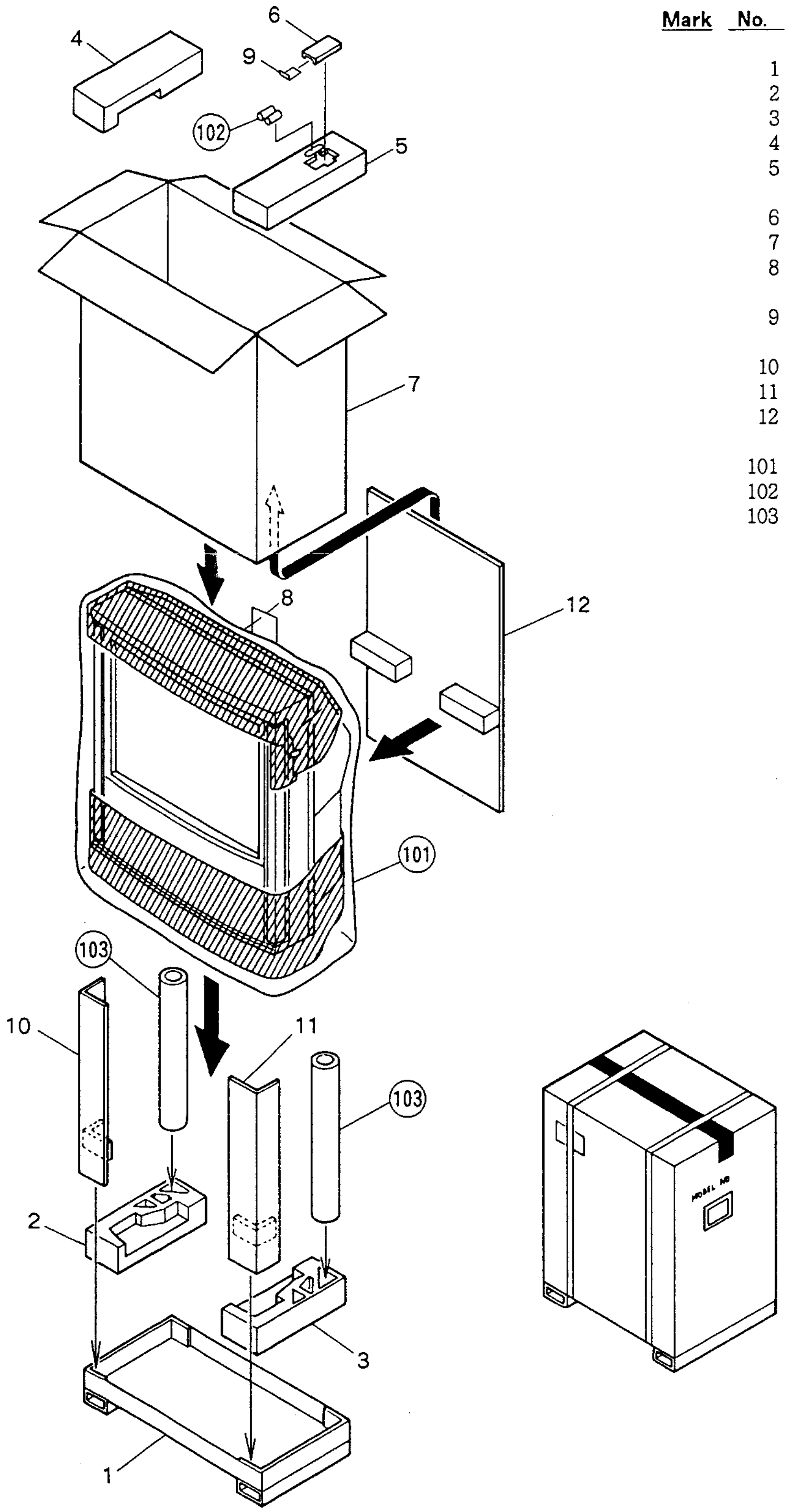
Mark	No.	Part No.	Description
☆	1	AWL1024	Lens assembly 40 (GB)
☆	2	AWL1025	Lens assembly 40 (R)
⚠☆	3	AWY1062	CRT assembly G
⚠☆	4	AWY1063	CRT assembly R
⚠☆	5	AWY1064	CRT assembly B
⚠	6	ATL1054	Deflection yoke (R) (L1)
⚠	7	ATL1055	Deflection yoke (B) (L3)
⚠	8	ATL1056	Deflection yoke (G) (L2)
	9	AWZ2530	R. CRT assembly
	10	AWZ2531	G. CRT assembly
	11	AWZ2532	B. CRT assembly
	12	AMZ40P080FZK	Screw
	13	FBT40P120FZK	Screw
	14	BBZ30P080FZK	Screw

Mark	No.	Part No.	Description
	101		CRT stand
	102		Cover L
	103		Lead clamper



6.5 PACKING

Mark	No.	Part No.	Description
	1	AHD1686	Under carton
	2	AHA1264	Under pad L
	3	AHA1265	Under pad R
	4	AHA1262	Upper pad L
	5	AHA1263	Upper pad R
	6	AXD1108	Remote control unit
	7	AHD1685	Upper carton
	8	ARB1190	Operating instructions (English)
	9	AZN1459	Battery cover
	10	AHA1266	Side pad L
	11	AHA1267	Side pad R
	12	AHA1268	Rear pad
	101		Packing bag
	102		Battery
	103		Spiral tube



7. ELECTRICAL PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
  Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).
  560 Ω→56 × 10^1 →561 ·········· RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
  47k Ω→47 × 10^3 →473 ·········· RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
  0.5 Ω→0R5 ·········· RN2H$\boxed{0}\boxed{R}\boxed{5}$K
  1 Ω→010 ·········· RS1P$\boxed{0}\boxed{1}\boxed{0}$K
  Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
  5.62k Ω→562 × 10^1 →5621 ·········· RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F
- Parts marked by ☆ are important parts which use X-rays. If any of these parts need to be replaced, always replace with specified parts.
- Parts marked by × are important parts which use X-rays. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.

Miscellaneous Parts

P. C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	FRONT CONTROL assembly	AWZ2539
	VIDEO assembly	AWV1078
	FRONT INPUT TERMINAL assembly	AWZ2542
☆	DEFLECTION assembly	AWV1080
	RECEIVER assembly	AWZ2541
	TUNER assembly	AWE1136
	CONVERGENCE assembly	AWZ2626
	R CRT assembly	AWZ2530
	G CRT assembly	AWZ2531
	B CRT assembly	AWZ2532

OTHERS

Mark	Symbol & Description	Part No.
⚠	R1,R2 Wire-wound resistor (0.47Ω/20W)	ACN1058
⚠	VR1 Focus variable resistor	ACX1025
⚠	L1 Deflection yoke (R)	ATL1054
⚠	L2 Deflection yoke (G)	ATL1056
⚠	L3 Deflection yoke (B)	ATL1055
⚠	FU651 Fuse (8A/125V)	AEK1002
⚠	FU652,FU655,FU656,FU658 Fuse (4A/125V)	AEK1018
	Speaker (High range)	APT1003
	Speaker (Mid-low range)	APV1013
⚠	AC power cord	ADG1056
⚠☆	CRT assembly G	AWY1062
⚠☆	CRT assembly R	AWY1063
⚠☆	CRT assembly B	AWY1064
	Remote control unit	AXD1108

FRONT CONTROL Assembly (AWZ2539)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	PC861 CdS	SC-05-8S
	Q861	2SC1740S
	D861	AEL-459

SWITCHES

Mark	Symbol & Description	Part No.
	S861 – S875 Tact switch (POWER, FACTORY ADJ MODE, INPUT SELECTOR, CHANNEL (+, –), VOLUME (+, –), STD/AV MEM, DPO, PRESET MENU (ON/OFF, SELECT, SET))	ASG-703

CAPACITOR

Mark	Symbol & Description	Part No.
	C951	CEJA470M10

RESISTORS

Mark	Symbol & Description	Part No.
	VR861 Semi-fixed (47kΩ)	VRTS6VS473
	R531 – R535	RD1/8PM□□□J

VIDEO Assembly (AWV1078)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	TH601	TH101-2
	IC401	PA0040
	IC103	AN5302K
	IC102	PA0030
	IC101	TC4066BP
	IC206	UPC78M05H
	IC205	M6M80011AP
	IC203	PDG040
	IC201,IC202	TC4051BP
	IC204	UPD6145C-001
	IC601	NJM78M09A
	IC451	TA7630P
	IC452	TA8200AH
	Q248,Q408,Q413,Q414	RN1203
	Q102 – Q104,Q109,Q110,Q116, Q117,Q128,Q129,Q132,Q134, Q137 – Q141,Q145,Q147,Q148, Q150,Q154,Q156,Q157,Q162,Q167, Q168,Q171,Q172,Q201,Q203,Q204, Q206,Q207,Q209,Q211,Q213,Q215, Q217,Q219,Q222,Q225,Q226,Q228, Q230,Q242,Q246,Q247,Q401,Q407, Q455,Q604,Q609	2SA933S
	Q105 – Q108,Q113 – Q115, Q118 – Q122,Q127,Q133,Q135, Q136,Q144,Q146,Q149,Q152,Q160, Q161,Q163 – Q165,Q202,Q205, Q208,Q210,Q212,Q214,Q216,Q218, Q220,Q221,Q223,Q224,Q227,Q229, Q231 – Q241,Q243,Q245,Q249, Q405,Q406.Q451,Q452,Q456, Q605 – Q608	2SC1740S
	Q453,Q454,Q457,Q458	2SC3327
	Q125,Q126,Q130,Q131,Q142,Q143, Q166	2SK246
	Q244	2SD438
	Q601	2SB950A
	Q603	2SC1845
	Q602	2SD1276A
	D112,D220	RD5.1ESB1
	D905	HZS5BLL
	D451 – D454	RD6.8ESB2
	D106	1SS108
	D101 – D103,D109 – D111,D115, D116,D125 – D133,D201 – D213, D215,D221 – D224,D227 – D236, D455 – D462,D601 – D608,D610, D611,D613,D614,D901 – D903	1SS252
	D107,D108,D113,D114,D121,D122	OA90A-M
	D463	11E2

SWITCH

Mark	Symbol & Description	Part No.
	S451 Slide switch (SPEAKER SELECTOR)	ASH1001

COILS

Mark	Symbol & Description	Part No.
	L150 Tuning coil	ATG1006
	L105,L106	LAU1R8M
	L114,L201,L203	LAU100K
	L101,L108,L110,L151	LAU150K
	L103,L104	LAU3R9K
	L111,L112,L115	LAU4R7K
	L107	LAU680K
	L109	LAU820K
	L202	LAU470K
	L451,L452 AF choke coil (1μH)	ATH-133

CAPACITORS

Mark	Symbol & Description	Part No.
	TC201 Ceramic trimmer (5.2 – 30p)	ACM-017
	C695 (0.82μ / 50V)	ACH-388
	C521,C522 (3.3μ / 63V) (NP)	ACH1127
	C681 (2.2μ / 16V)	ACH1131
	C143	CCCCH100D50
	C244	CCCCH330J50
	C692	CCDCH221J50
	C110	CCCSL100D50
	C159,C178,C239,C685,C700,C791	CCCSL101J50
	C112,C149	CCCSL121J50
	C121,C122	CCCSL271J50
	C102	CCCSL150J50
	C131,C146,C163,C175,C183	CCCSL151J50
	C190	CCCSL220J50
	C179	CCCSL221J50
	C111,C132,C795	CCCSL390J50
	C267	CCDSL270J50
	C144,C161,C172,C185	CCCSL470J50
	C114,C240	CCCSL680J50
	C241	CCDSL560J50
	C797	CCDSL181J50
	C145,C162,C173,C683	CEANP010M50
	C168	CEANP100M16
	C167	CEANP3R3M50
	C479	CEANPR22M50
	C268,C697	CEANP2R2M50
	C793	CEANP4R7M35
	C455	CEANP220M10
	C141	CEASR47M50
	C106,C138,C156 – C158,C166, C258,C459 – C468,C480,C517, C518,C523,C532,C699	CEAS010M50
	C101,C104,C108,C135,C139,C152, C165,C169,C174,C215,C217,C245, C247,C253,C266,C477,C696,C794	CEAS100M50

Mark	Symbol & Description	Part No.
	C126,C488	CEAS101M16
	C170	CEAS220M16
	C147,C186	CEAS221M16
	C151,C153	CEAS3R3M50
	C109,C123,C124,C176,C481	CEAS330M16
	C103	CEAS4R7M50
	C113,C127 – C129,C133,C698	CEAS470M16
	C171	CKCYB331K50
	C107,C118,C119	CKCYB391K50
	C160	CKCYB561K50
	C130	CKCYF102Z50
	C116,C117,C120,C125,C134,C155	CKDYF103Z50
	C140,C142,C154	CKCYX473M25
	C230,C684	CEASR33M50
	C211	CEAS0R1M50
	C249,C250,C673	CEAS101M10
	C221,C226,C233,C265,C507,C508	CEAS330M25
	C238	CEAS470M25
	C242,C689	CEAS471M10
	C213,C216,C219,C220, C222 – C225,C228,C229,C231, C232	CEJA2R2M50
	C214,C263,C264	CKCYB102K50
	C234	CKCYB472K50
	C218,C227,C235,C243,C246,C248, C252,C261,C458,C472,C474,C478, C483 – C485,C487,C525,C680, C800	CKDYF103Z50
	C212,C236,C237,C251,C262,C511, C526,C533,C674 – C677,C688, C690	CKDYF473Z50
	C456	CEAS102M10
	C469,C470,C505,C506,C687	CEAS2R2M50
	C486,C502	CEAS222M16
	C451 – C454,C471,C473	CEJA220M10
	C515,C516	CEAS222M35
	C497 – C501,C524	CEAS470M10
	C509,C510	CEAS470M50
	C512	CEAS471M50
	C495,C496,C513,C514	CFTXA124J50
	C491,C492	CFTXA154J50
	C493,C494	CKCYB562K50
	C503,C504	CKMYB561K50
	C672	CEAS102M16
	C693,C694	CEAS222M25
	C671	CEHAQ471M50
	C792	CKCYB561K50
	C682	CQMA123J50
	C678	CQMA182J50
	C691	CQMA223J50
	C686	CQMA333J50
	C798	CQMA473J50
	C679	CQMA683J50

Mark	Symbol & Description	Part No.
	C530,C531	CEHAQ2R2M50
	C799	CEAS220M50
	C269	CEANPR47M50
	C270,C271	CKDYX473M25

RESISTORS

Mark	Symbol & Description	Part No.
	VR102 Semi-fixed (220Ω)	ACP1021
	VR101 Semi-fixed (1kΩ)	ACP1022
	VR107 Semi-fixed (2.2kΩ)	ACP1023
	VR105,VR601 Semi-fixed (100Ω)	ACP1031
	R242,R271,R312,R673,R674	RD1/2PM□□□J
⚠	R514,R696,R697	RD1/4PMFL100J
	R617 Resistor array	RA4T103J
⚠	R614	RS2LMF220J
	R417,R418	RS1LMF010J
	R401,R402,R423	RS2LMF□□□J
⚠	R951,R952	RD1/4PMFL2R2J
⚠	R694,R695	RD1/4PMFL220J
	R949,R950	RD1/4PMFL□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X101 Crystal resonator (3.579545MHz)	ASS-023
	DL101 Glass delay line	ATN1011
	DL102,DL104 Delay line	ATN1013
	DL103 Delay line	ATN1014
	X201 Ceramic resonator (4.19MHz)	ASS1022
	X601 Ceramic resonator	ASS1033
	12P Pin jack	AKB1094
	4P Mini DIN socket	AKP1016
	Mini jack	AKN-207
	2P Pin jack	AKB1039
	4P Terminal (SPEAKER)	AKE1014

FRONT INPUT TERMINAL Assembly (AWZ2542)

RESISTORS

Mark	Symbol & Description	Part No.
	R541 – R543	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	1P Pin jack	AKB-104
	1P Pin jack	AKB-105
	1P Pin jack	AKB-106

☆DEFLECTION Assembly (AWV1080)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC651	ON3161-Q
	IC551	NJM4558DXP
⚠	IC552	NJM4558DXP
×	Q592	
	Q554,Q589,Q656 – Q660,Q664, Q665	2SA933S
×	Q590	
×	Q586,Q587	
	Q597	2SA965
	Q551 – Q553,Q555,Q556,Q599, Q600,Q653 – Q655,Q661,Q667	2SC1740S
	Q598	2SC2235
	Q557,Q596	2SC2705
×	Q591,Q593	
	Q559,Q588	2SC3332
	Q558,Q595	2SD1276A
	Q560	2SD1911
⚠	Q594	2SD1911
	Q652	2SB824
	Q662	2SC2705
	Q651	2SC3451
	Q663,Q666	2SD1275
	D573	ES1F
⚠	D598,D599	ES1F
	D557	HZS6C1L
×	D580,D582	
	D578	RD39ESB
×	D584	
×	D592	
×	D597	
	D589,D590	UZ-15BS
	D672	HZS18-1L
	D668	HZS6A1L
	D662,D663,D671,D673	HZS6B1L
	D665	HZS6C2L
	D651	RB604
	D680	RD39ESB4
	D679	RG4A
	D666,D674 – D678	RL4Z
	D660	S1YB10
×	D581,D583	
	D551,D553 – D556,D574 – D577, D579,D585 – D588,D591, D593 – D596,D655 – D658,D661, D664,D681 – D686	1SS252
	D552	11E2
⚠	D558	11E2
	D653,D654,D659	11DF1FD
⚠	D600	11DF2FD

RELAY

Mark	Symbol & Description	Part No.
	RY651 Relay	ASR-512

COILS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	L651 Line filter	ATF1031
	L551 FBT coil	ATL1053
	L552 FBT coil	ATL1057
	L553 Linearity coil	ATL1058
	L654,L656,L658 – L679 Ferrite bead	ATX-028
	L652 Line filter	ATF-207
	L655 AF choke coil (1μH)	ATH-133
	L653 AF choke coil (5.3μH)	ATH1009
	L556	LTA272J
⚠×	T553 Flyback transformer	
⚠	T551,T552 Horiz. drive transformer	ATK1045
	T652 Converter transformer	ATK1044
	T651 Power transformer	ATT1099

CAPACITORS

Mark	Symbol & Description	Part No.
	C701,C702 (0.1μ/AC250V)	ACE-507
	C625 (0.82μ/200V)	ACE1044
	C620 (680p/2kV)	ACG1024
⚠	C666 (680p/2kV)	ACG1024
	C670 (10μ/160V)	ACH-369
⚠	C619 (1μ/160V)	ACH-372
⚠	C668 (10μ/160V)	ACH1117
	C616 (330μ/200V)	ACH1079
	C722 – C725 (6800p/AC250V)	ACE1009
	C703 – C706 (0.01μ/AC250V)	ACG-001
	C714 (2200p/2kV)	ACG-039
	C760 (100p/2kV)	ACG-032
	C712 (4700p/2kV)	ACG1028
	C715 (2.2μ/350V)	ACH-371
	C759 (560μ/160V)	ACH1016
	C747 (3300μ/50V)	ACH1041
	C707 (560μ/200V)	ACH1042
	C709 (1000μ/200V)	ACH1050
	C717 (47μ/100V)	ACH1132
	C657,C669	CCCSL101J50
	C624	CCCSL181J50
	C708	CCCSL151J50
	C718,C720,C749,C751,C752,C755, C756,C758	CCDSL221K500
	C645	CEAS0R1M50
	C608 – C610,C640,C643,C647, C648,C655,C656,C659,C733,C744, C763	CEAS010M50
	C607,C612,C741,C743,C745,C765	CEAS100M50
	C653,C654	CEAS101M35
	C665	CEAS220M100
	C641	CEAS221M35
	C642,C646	CEAS470M16
	C732,C764	CEAS101M16
	C726	CEAS102M25

Mark	Symbol & Description	Part No.
	C746	CEAS221M16
	C739	CEAS331M35
	C729 – C731	CEAS470M25
	C617,C663	CEHAQ010M50
	C664	CEHAQ100M50
	C660	CEHAQ220M25
	C754	CEHAQ102M50
	C735,C748,C753	CEHAQ222M35
	C757	CEHAQ222M50
	C623	CFPA103H1200
	C622,C667	CFPA123H1200
	C716	CFTXA224J50
	C721	CFTXA474J50
	C644	CKCYB102K50
	C615,C618	CKCYB102K500
	C742	CKCYB681K50
	C639,C649 – C652,C727,C728, C734	CKCYF103Z50
	C736,C738	CKCYF473Z50
	C740	CKCYX473M25
	C611	CKDYB222K50
	C662	CKDYB472K500
	C601,C603,C613	CKDYF473Z50
	C761,C762	CKDYF103Z500
	C602	CKDYX104M25
	C605	CQMA103K400
	C604	CQMA123K50
	C658	CQMA104K50
	C606	CQMA223K50
	C661	CQMA683K400
	C719	CQMA822J50
	C621	CQPA683J400

RESISTORS

Mark	Symbol & Description	Part No.
×	VR553 Semi-fixed	
×	VR555 Semi-fixed	
×	VR554 Semi-fixed	
×	VR552 Semi-fixed	
	VR651 Semi-fixed (1kΩ)	VRTS6VS102
	VR551 Semi-fixed (2.2kΩ)	ACP1023
	R180 Solid (47/1/2W)	ACN-225
⚠	R143 Solid (33k/1/2W)	ACN1011
	R251,R279 Solid (2.2M/1/2W)	ACN-208
	R252,R264 (2.7Ω/5W)	ACN1060
	R254 Wire-wound (15/10W)	ACN1056
	R256,R257 Wire-wound (18/10W)	ACN1057
⚠	R139	RD1/2PMFL102J
⚠	R142	RD1/2PMFL3R9J
	R108	RD1/2PMFL100J
	R133,R134,R141,R185,R224,R225, R228,R255,R261,R263,R313,R318	RD1/2PM☐☐☐J
⚠	R183,R238	RD1/4PMFL100J
⚠	R186,R187	RD1/4PMFL390J
	R184,R243,R258	RD1/4PMFL☐☐☐J
	R244	RD1/4PM124J
	R229,R230	RN1/2PC☐☐☐☐F
	R291,R295 – R297,R310,R311	RN1/4PC☐☐☐☐F
	R199,R200,R253,R312	RS1LMF☐☐☐J
	R241,R259,R288,R293,R317	RS2LMF☐☐☐J
	R246,R265,R316	RS3LMF☐☐☐J
	R247	RFA1/4PS221J
	R140,R144,R231	RS2PMF☐☐☐J
⚠×	R234	
×	R232	
×	R233	
×	R240	
×	R226	
×	R213	
×	R188,R196,R197,R211	
×	R210	
×	R209	
×	R208	
×	R239	
×	R194	
×	R195	
×	R198	
×	R203	
×	R204	
×	R205	
×	R206	
	Other resistors	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
	Mica sheet (For Q651)	AEP-056

RECEIVER Assembly (AWZ2541)

CAPACITORS

Mark	Symbol & Description	Part No.
	C962	CCDSL101J50
	C961	CEJA101M16

RESISTOR

Mark	Symbol & Description	Part No.
	R551	RD1/8PM102J

OTHERS

Mark	Symbol & Description	Part No.
	Remote control sensor unit	AXX1010

TUNER Assembly (AWE1136)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC304	CXA1124AS
	IC301	M51365SP
	IC302	M5223P
	IC305	NJM78M09A
	IC303	TD6359P
	Q321	RN1201
	Q320	RN1203
	Q319	RN2203
	Q301 – Q304,Q307,Q312,Q315,	2SA933S
	Q308 – Q311,Q313,Q314,Q318, Q322 – Q324,Q327	2SC1740S
	Q317	2SC1740SLN
	Q305,Q306	2SC2786
	Q316	2SC2878
	D304	RD30ESB2
	D301,D302,D305 – D309	1SS252

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L302,L303,L309 Tuning coil	ATC-226
	L310 Tuning coil	ATC-249
	L306 Tuning coil	ATC-254
	L312 FM detector coil	ATE-067
	L301	LAUR33M
	L304	LAUR47M
	L305	LAU1R2M
	L308	LAU150K
	L311,L313 – L316	LAU2R2M
	F303 Ceramic trap	ATF-114
	F304 Ceramic filter	ATF-166
	F301 SAW filter	ATF1019
	F302 SAW filter	ATF1046

CAPACITORS

Mark	Symbol & Description	Part No.
	C402 (3.3μ/50V)	ACH1128
	C400 (10μ/50V)	ACH1129
	C350	CCDRH270J50
	C334,C348	CCDRH560J50
	C338	CCDSH470J50
	C347	CCDSL820J50
	C337,C339	CCMCH040C50
	C335,C336,C354	CCMCH050C50
	C417	CCMCH150J50
	C385,C386	CCMCH270J50
	C379,C381 – C384	CCMSL101J50
	C396	CEANPR22M50
	C361,C407	CEASR47M50
	C353,C401	CEAS010M50
	C364	CEAS100M50
	C376,C377,C388,C422	CEAS101M10
	C341	CEAS101M16
	C331	CEAS102M16
	C345,C349,C408,C409	CEAS2R2M50
	C375,C415	CEAS331M16
	C342,C392,C395,C399,C403,C404, C406,C412	CEAS4R7M50
	C351,C366,C373,C397,C414	CEAS470M16
	C405	CFTXA473J50
	C413,C416	CKCYX104M25
	C367,C374	CKCYX473M25
	C333,C340,C343,C362,C365,C368, C370,C371,C378,C380,C419	CKDYB102K50
	C346	CKDYB122K50
	C332,C352,C355,C356,C359,C360, C363,C372,C387,C391,C418,C420, C421	CKDYF103Z50
	C344	CQMA103J50
	C357,C358	CQMA104J50
	C394	CQMA123J50
	C389	CQMA154J50
	C410,C411	CQMA222J50
	C398	CQMA272J50
	C390	CQMA333J50
	C393	CQMA562K50
	C369	CQMA563J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR301,VR302,VR306 Semi-fixed (4.7kΩ)	ACP1024
	VR305 Semi-fixed (10kΩ)	ACP1025
	VR303,VR304 Semi-fixed (47kΩ)	ACP1027
	R1242,R1244	RD1/2PMFL□□□J
	R1245	RD1/4PMFL8R2J
	R1243	RD1/4PM221J
	R1213,R1217,R1218,R1220,R1221	RN1/4PC□□□□F
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X301 Crystal resonator (4.0MHz)	ASS-013
	TV Front end	AXF1033

CONVERGENCE Assembly (AWZ2626)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC704 – IC706	M5220L
	IC703	NJM79L15A
	IC701	PA0036
	IC751	STK4277-SL
	IC702	UPC78L12J
	Q751	2SB951A
	Q701 – Q705,Q755	2SC1740S
	Q753,Q754	2SC2235
	Q752	2SD1277A
	D705,D708	RD5.1ESB
	D701	RD8.2ESB
	D702 – D704,D706,D707	1SS252
	D751,D752	11E2

CAPACITORS

Mark	Symbol & Description	Part No.
	C829,C830,C835,C836,C841,C842 C845,C846,C851,C852	CCMSL470J50
	C822	CEANP010M50
	C801,C804	CEASR33M50
	C802,C805,C807	CEAS010M50
	C810,C823 – C826	CEAS100M50
	C855	CEAS101M16
	C856	CEAS101M25
	C813,C815	CEAS102M6
	C819,C821	CEAS2R2M50
	C827,C828,C833,C834,C839,C840, C843,C844,C849,C850	CEAS221M10
	C886,C888 – C890	CEHAQ101M50
	C882,C884	CEHAQ221M35
	C891	CEHAQ330M50
	C803,C806,C812,C814,C831,C832, C837,C838,C847,C848	CGMYX103M16
	C881,C883,C885,C887	CKCYF103Z50
	C809	CQMA154J50
	C811,C816	CQMA224J50
	C817	CQMA332J50
	C820	CQMA471J50
	C818	CQMA681J50
	C808	CQMA821J50
	C854	CQSA102J50
	C853	CQSA152J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR701 Semi-fixed (10kΩ)	ACP1025
	VR705 – VR707,VR709 – VR740 Semi-fixed (4.7kΩ)	ACP1024
	VR708 Semi-fixed (22kΩ)	ACP1026
	VR702,VR703 Semi-fixed (47kΩ)	ACP1027
	VR704 Semi-fixed (220kΩ)	ACP1029
	R452,R453 (4.7Ω/5W)	ACN1059
	R459	RD1/2PMFL560J
	R103,R104,R455,R457,R460	RD1/4PMFL□□□J
	R456,R458,R461,R480,R481	RS1LMF□□□J
	R101,R102,R451,R454, R475 – R479	RS2LMF□□□J
	Other resistors	RD1/8PM□□□J

R. CRT Assembly (AWZ2530)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q801	2SC2278
	D801	1SS252

COILS

Mark	Symbol & Description	Part No.
	L803	LAU101K
	L801,L802	LAU470K

CAPACITORS

Mark	Symbol & Description	Part No.
	C924 (1000p/2kV)	ACG1001
	C923 (4.7μ/250V)	ACH-378
	C921	CEAS101M16
	C922	CKCYB681K50

RESISTORS

Mark	Symbol & Description	Part No.
	R755 Solid (47Ω/1/2W)	ACN-225
	R752 Solid (1kΩ/1/2W)	ACN1006
	R751	RD1/8PM103J
	R753,R754	RS3LMF332J

OTHERS

Mark	Symbol & Description	Part No.
	CRT socket	AKG1003

G. CRT Assembly (AWZ2531)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q821	2SC2278
	D821	1SS252

COILS

Mark	Symbol & Description	Part No.
	L823	LAU101K
	L821,L822	LAU470K

CAPACITORS

Mark	Symbol & Description	Part No.
	C934 (1000p/2kV)	ACG1001
	C933 (4.7μ/250V)	ACH-378
	C931	CEAS101M16
	C932	CKCYB681K50

RESISTORS

Mark	Symbol & Description	Part No.
	R765 Solid (47Ω/1/2W)	ACN-225
	R762 Solid (1kΩ/1/2W)	ACN1006
	R761	RD1/8PM103J
	R763,R764	RS3LMF332J

OTHERS

Mark	Symbol & Description	Part No.
	CRT socket	AKG1003

B. CRT Assembly (AWZ2532)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q841	2SC2278
	D841	1SS252

COILS

Mark	Symbol & Description	Part No.
	L843	LAU101K
	L841,L842	LAU470K

CAPACITORS

Mark	Symbol & Description	Part No.
	C944 (1000p/2kV)	ACG1001
	C943 (4.7μ/250V)	ACH-378
	C941	CEAS101M16
	C942	CKCYB681K50

RESISTORS

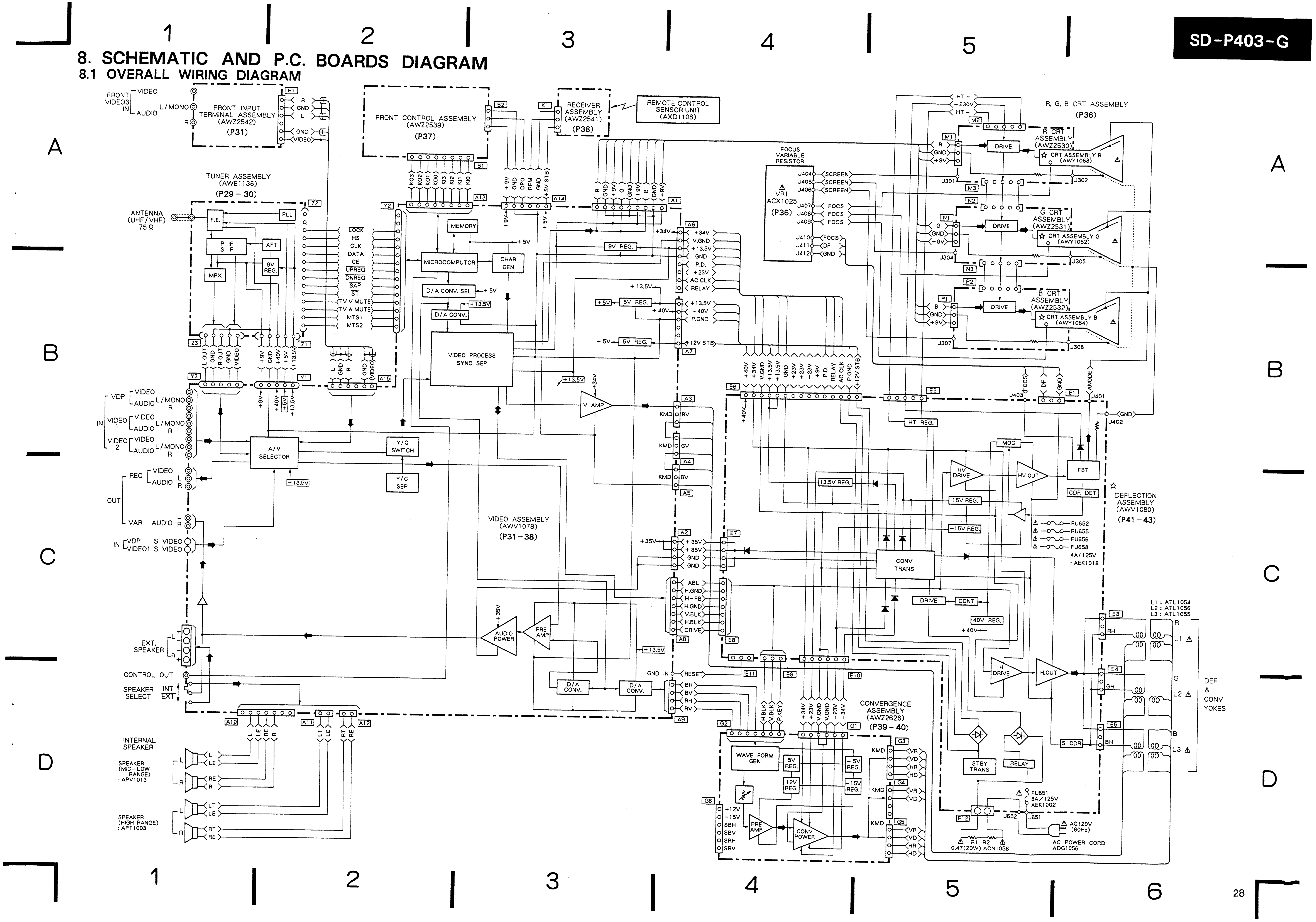
Mark	Symbol & Description	Part No.
	R775 Solid (47Ω/1/2W)	ACN-225
	R772 Solid (1kΩ/1/2W)	ACN1006
	R771	RD1/8PM103J
	R773,R774	RS3LMF332J

OTHERS

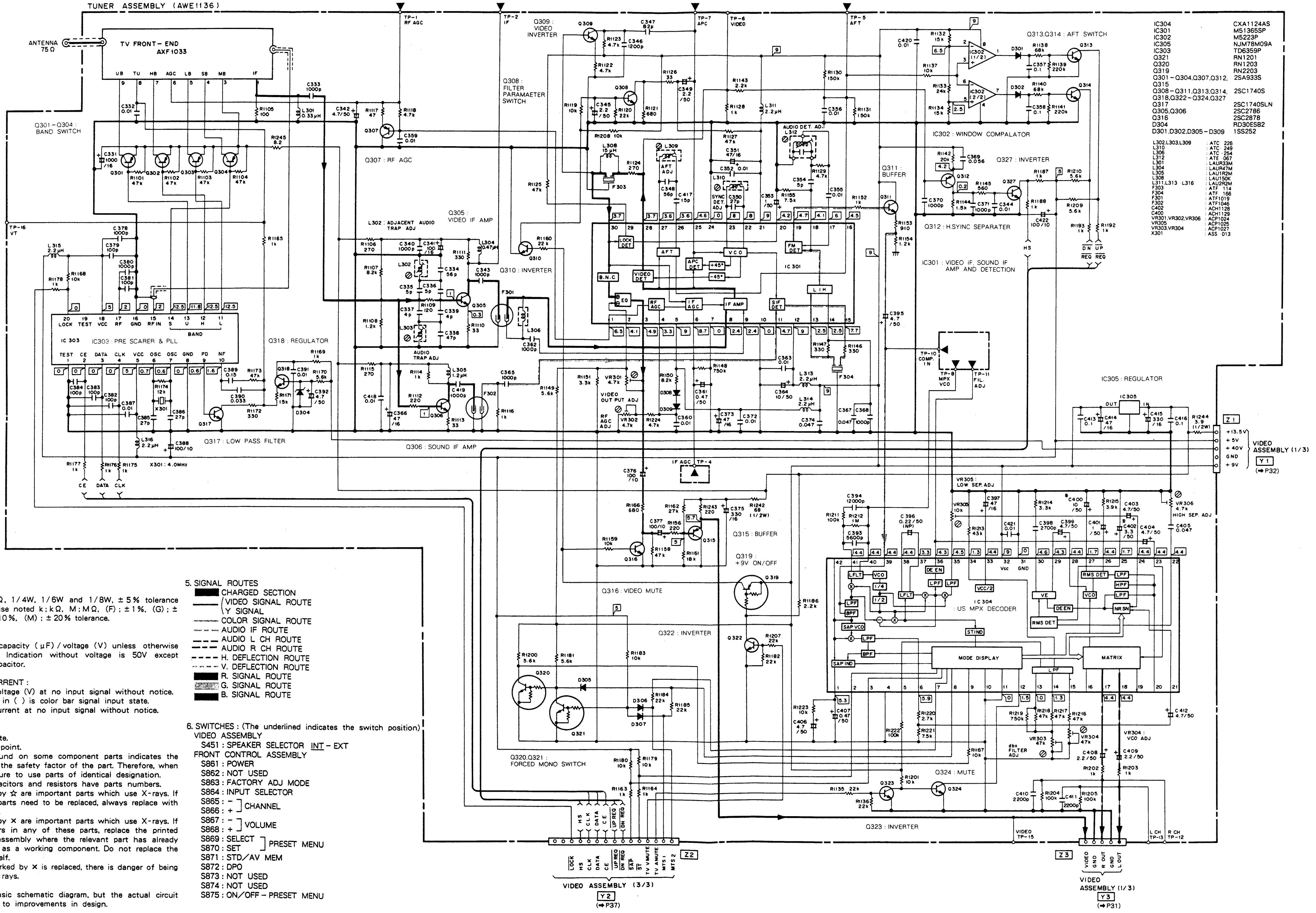
Mark	Symbol & Description	Part No.
	CRT socket	AKG1003

8. SCHEMATIC AND P.C. BOARDS DIAGRAM

8.1 OVERALL WIRING DIAGRAM


1
2
3
4
5
6
A
B
C
D
FRONT VIDEO3 IN
VIDEO
AUDIO L/MONO
R
FRONT INPUT TERMINAL ASSEMBLY (AWZ2542)
(P31)
H1
FRONT CONTROL ASSEMBLY (AWZ2539)
(P37)
B2
B1
K1
RECEIVER ASSEMBLY (AWZ2541)
(P38)
REMOTE CONTROL SENSOR UNIT (AXD1108)
TUNER ASSEMBLY (AWE1136)
(P29 – 30)
ANTENNA (UHF/VHF) 75 Ω
F.E.
PLL
P IF
S IF
AFT
9V REG.
MPX
LOCK
HS
CLK
DATA
CE
UPREQ
DNREQ
SAP
ST
TV V MUTE
TV A MUTE
MTS1
MTS2
Z1
Z2
Z3
Y1
Y2
Y3
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
MEMORY
MICROCOMPUTOR
CHAR GEN
D/A CONV. SEL
D/A CONV.
VIDEO PROCESS SYNC SEP
V AMP
9V REG.
5V REG.
A/V SELECTOR
Y/C SWITCH
Y/C SEP
VIDEO ASSEMBLY (AWV1078)
(P31 – 38)
AUDIO POWER
PRE AMP
D/A CONV.
VDP
VIDEO 1
VIDEO 2
IN
OUT
REC
VAR AUDIO
S VIDEO
EXT. SPEAKER
CONTROL OUT
SPEAKER SELECT INT EXT
INTERNAL SPEAKER
SPEAKER (MID–LOW RANGE) : APV1013
SPEAKER (HIGH RANGE) : APT1003
FOCUS VARIABLE RESISTOR
VR1 ACX1025
(P36)
SCREEN
FOCS
R, G, B CRT ASSEMBLY
(P36)
R CRT ASSEMBLY (AWZ2530)
CRT ASSEMBLY R (AWY1063)
G CRT ASSEMBLY (AWZ2531)
CRT ASSEMBLY G (AWY1062)
B CRT ASSEMBLY (AWZ2532)
CRT ASSEMBLY B (AWY1064)
DRIVE
HT –
+230V
HT +
HT REG.
MOD
HV DRIVE
HV OUT
FBT
CDR DET
13.5V REG.
15V REG.
–15V REG.
CONV TRANS
DRIVE
CONT
40V REG.
H DRIVE
H.OUT
S CDR
STBY TRANS
RELAY
DEFLECTION ASSEMBLY (AWV1080)
(P41 – 43)
FU652
FU655
FU656
FU658
4A/125V : AEK1018
FU651 8A/125V AEK1002
R1, R2 0.47(20W) ACN1058
AC120V (60Hz)
AC POWER CORD ADG1056
L1 : ATL1054
L2 : ATL1056
L3 : ATL1055
DEF & CONV YOKES
CONVERGENCE ASSEMBLY (AWZ2626)
(P39 – 40)
WAVE FORM GEN
5V REG.
–5V REG.
12V REG.
–15V REG.
PRE AMP
CONV POWER
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E12
G1
G2
G3
G4
G5
G6

8.2 TUNER ASSEMBLY


TUNER ASSEMBLY (AWE1136)
ANTENNA 75Ω
TV FRONT-END AXF1033
UB TU HB AGC LB SB MB IF
Q301-Q304 : BAND SWITCH
Q307 : RF AGC
Q308 : FILTER PARAMAETER SWITCH
Q309 : VIDEO INVERTER
Q305 : VIDEO IF AMP
Q310 : INVERTER
Q306 : SOUND IF AMP
L302 : ADJACENT AUDIO TRAP ADJ
AUDIO TRAP ADJ
IC303 : PRE SCARER & PLL
Q318 : REGULATOR
Q317 : LOW PASS FILTER
X301 : 4.0MHz
CE DATA CLK
TP-1 RF AGC
TP-2 IF
TP-7 APC
TP-6 VIDEO
TP-5 AFT
TP-16 VT
AFT ADJ
SYNC DET. ADJ
AUDIO DET. ADJ
IC301 : VIDEO IF, SOUND IF AMP AND DETECTION
IC302 : WINDOW COMPALATOR
Q313,Q314 : AFT SWITCH
Q311 : BUFFER
Q312 : H.SYNC SEPARATER
Q327 : INVERTER
HS
DN UP REG REG
TP-10 COMP IN
TP-9 MPX VCO
TP-11 FIL ADJ
VIDEO OUT PUT ADJ
RF AGC ADJ
IF AGC TP-4
IC305 : REGULATOR
Z1
VIDEO ASSEMBLY (1/3)
Y1 (➡P32)
+13.5V +5V +40V GND +9V
VR305 : LOW SEP. ADJ
VR306 : HIGH SEP. ADJ
Q315 : BUFFER
Q316 : VIDEO MUTE
Q319 : +9V ON/OFF
Q322 : INVERTER
Q320,Q321 : FORCED MONO SWITCH
IC304 : US MPX DECODER
MODE DISPLAY
MATRIX
VR304 : VCO ADJ
dbx FILTER ADJ
Q324 : MUTE
Q323 : INVERTER
VIDEO TP-15
L CH TP-13
R CH TP-12
Z2
LOCK HS CLK DATA CE UP REG DN REG SEP ST TV V.MUTE TV A.MUTE MTS1 MTS2
VIDEO ASSEMBLY (3/3)
Y2 (➡P37)
Z3
VIDEO GND R OUT GND L OUT
VIDEO ASSEMBLY (1/3)
Y3 (➡P31)

IC304	CXA1124AS
IC301	M51365SP
IC302	M5223P
IC305	NJM78M09A
IC303	TD6359P
Q321	RN1201
Q320	RN1203
Q319	RN2203
Q301 – Q304, Q307, Q312, Q315	2SA933S
Q308 – Q311, Q313, Q314, Q318, Q322 – Q324, Q327	2SC1740S
Q317	2SC1740SLN
Q305, Q306	2SC2786
Q316	2SC2878
D304	RD30ESB2
D301, D302, D305 – D309	1SS252

L302, L303, L309	: ATC 226
L310	: ATC 249
L306	: ATC 254
L312	: ATE 067
L301	: LAUR33M
L304	: LAUR47M
L305	: LAU1R2M
L308	: LAU150K
L311, L313 L316	: LAU2R2M
F303	: ATF 114
F304	: ATF 166
F301	: ATF1019
F302	: ATF1046
C402	: ACH1128
C400	: ACH1129
VR301, VR302, VR306	: ACP1024
VR305	: ACP1025
VR303, VR304	: ACP1027
X301	: ASS 013

1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ± 1%, (G) ; ± 2%, (K) ; ± 10%, (M) ; ± 20% tolerance.

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
▭ ; DC voltage (V) at no input signal without notice.
Value in ( ) is color bar signal input state.
⇦mA ; DC current at no input signal without notice.

4. OTHERS :
➡ ; Signal route.
⊘ ; Adjusting point.

- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- ※ marked capacitors and resistors have parts numbers.
- Parts marked by ☆ are important parts which use X-rays. If any of these parts need to be replaced, always replace with specified parts.
- Parts marked by × are important parts which use X-rays. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself.
If any part marked by × is replaced, there is danger of being exposed to X-rays.

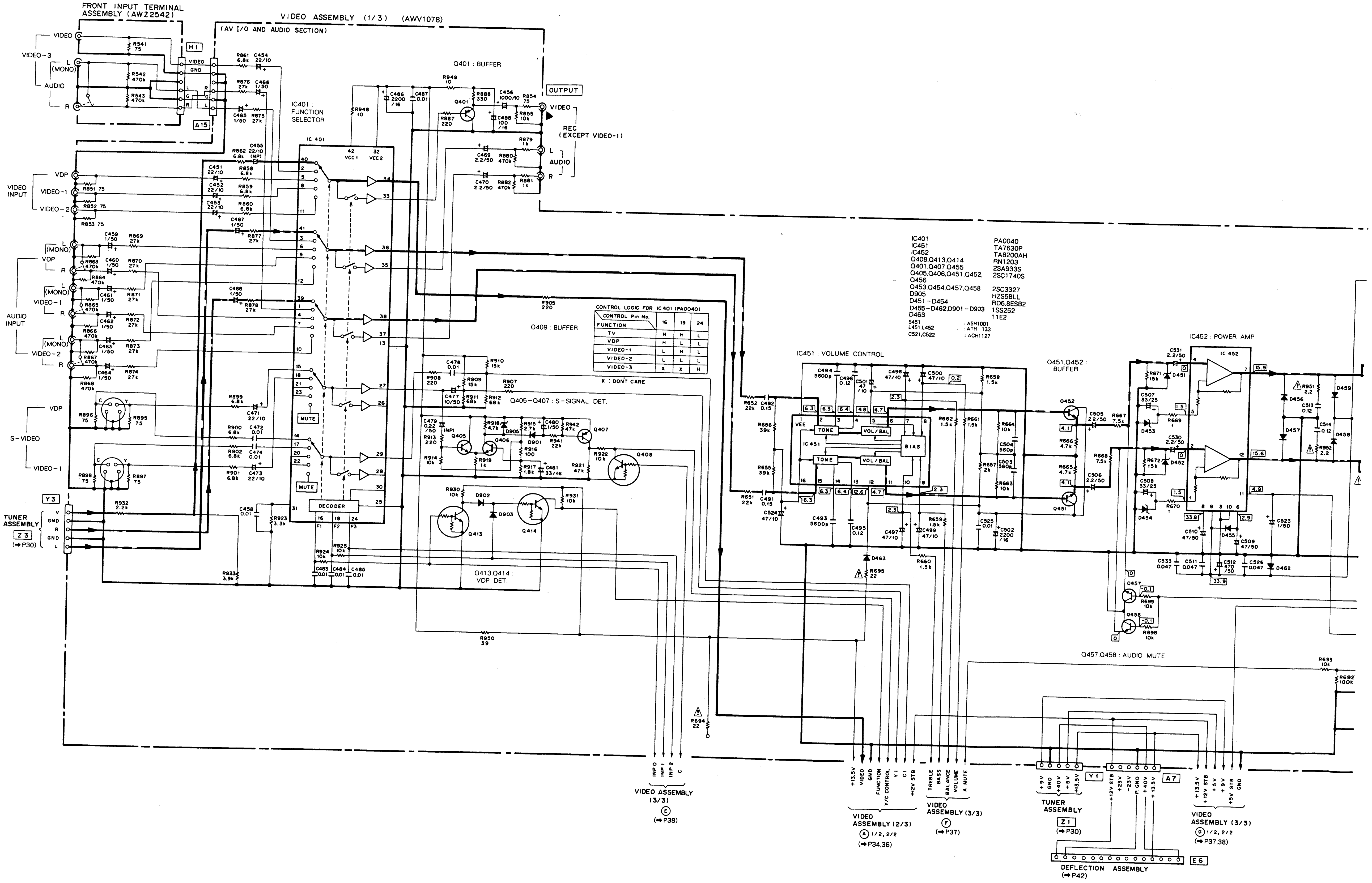
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SIGNAL ROUTES

▬	CHARGED SECTION
——	VIDEO SIGNAL ROUTE Y SIGNAL
┄┄	COLOR SIGNAL ROUTE
╌╌╌	AUDIO IF ROUTE
— — —	AUDIO L CH ROUTE
— — —	AUDIO R CH ROUTE
- - - -	H. DEFLECTION ROUTE
┈┈┈	V. DEFLECTION ROUTE
▬	R. SIGNAL ROUTE
▨	G. SIGNAL ROUTE
▬	B. SIGNAL ROUTE

6. SWITCHES : (The underlined indicates the switch position)
VIDEO ASSEMBLY
S451 : SPEAKER SELECTOR INT – EXT
FRONT CONTROL ASSEMBLY
S861 : POWER
S862 : NOT USED
S863 : FACTORY ADJ MODE
S864 : INPUT SELECTOR
S865 : – ⎤ CHANNEL
S866 : + ⎦
S867 : – ⎤ VOLUME
S868 : + ⎦
S869 : SELECT ⎤ PRESET MENU
S870 : SET ⎦
S871 : STD/AV MEM
S872 : DPO
S873 : NOT USED
S874 : NOT USED
S875 : ON/OFF – PRESET MENU

8.3 VIDEO (1/3), FRONT INPUT TERMINAL ASSEMBLIES

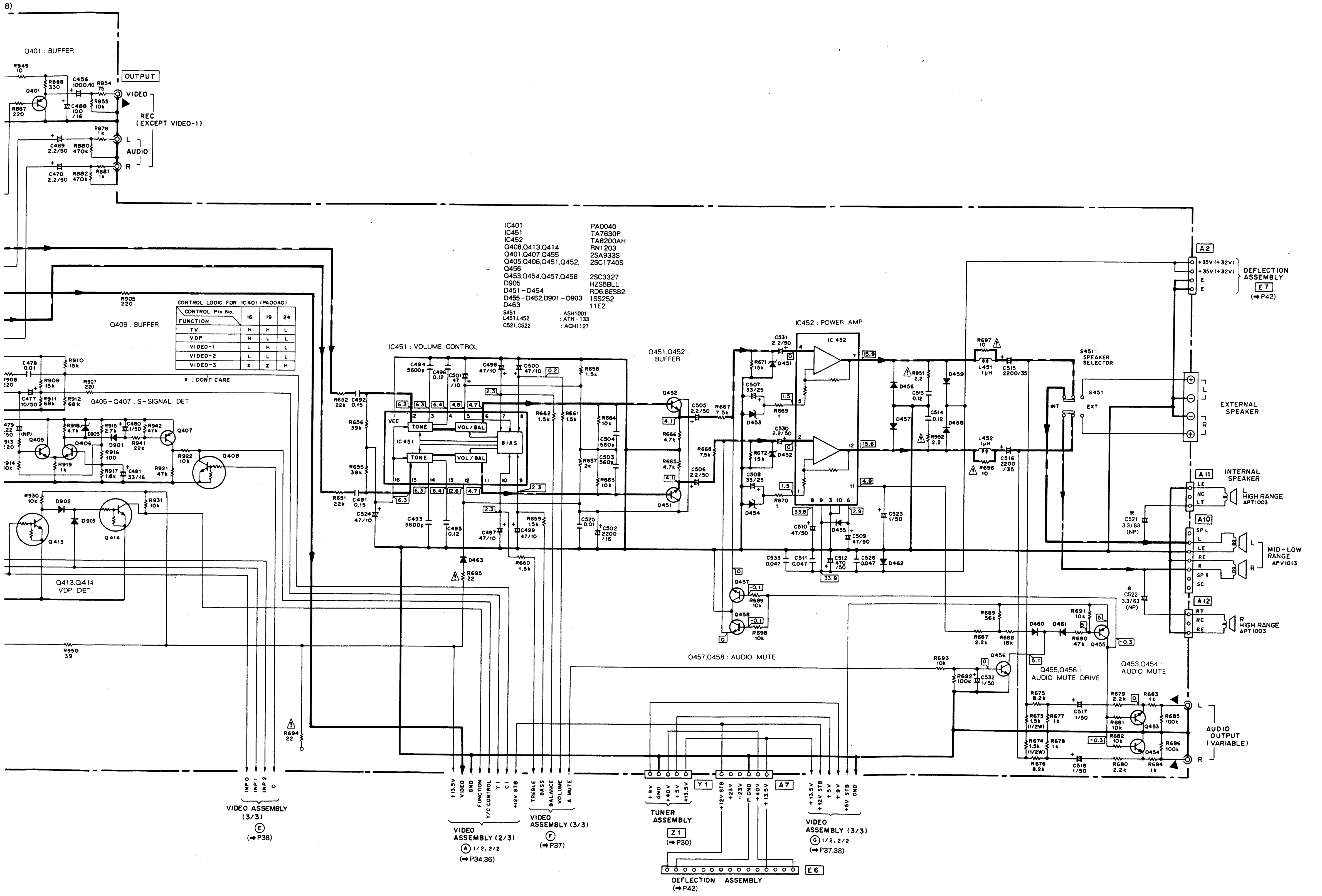

FRONT INPUT TERMINAL ASSEMBLY (AWZ2542)
VIDEO ASSEMBLY (1/3) (AWV1078)
(AV I/O AND AUDIO SECTION)
VIDEO-3
VIDEO INPUT
AUDIO INPUT
S-VIDEO
TUNER ASSEMBLY
IC401 : FUNCTION SELECTOR
Q401 : BUFFER
OUTPUT
REC (EXCEPT VIDEO-1)
Q409 : BUFFER
Q405-Q407 : S-SIGNAL DET.
Q413,Q414 : VDP DET.
DECODER
MUTE
IC451 : VOLUME CONTROL
TONE
VOL/BAL
BIAS
Q451,Q452 : BUFFER
IC452 : POWER AMP
Q457,Q458 : AUDIO MUTE
VIDEO ASSEMBLY (3/3) (➡P38)
VIDEO ASSEMBLY (2/3) (➡P34,36)
VIDEO ASSEMBLY (3/3) (➡P37)
TUNER ASSEMBLY (➡P30)
VIDEO ASSEMBLY (3/3) (➡P37,38)
DEFLECTION ASSEMBLY (➡P42)

CONTROL LOGIC FOR IC401 (PA0040)

CONTROL Pin No. / FUNCTION	16	19	24
TV	H	H	L
VDP	H	L	L
VIDEO-1	L	H	L
VIDEO-2	L	L	L
VIDEO-3	X	X	H

X : DON'T CARE

IC401	PA0040
IC451	TA7630P
IC452	TA8200AH
Q408,Q413,Q414	RN1203
Q401,Q407,Q455	2SA933S
Q405,Q406,Q451,Q452,Q456	2SC1740S
Q453,Q454,Q457,Q458	2SC3327
D905	HZS5BLL
D451-D454	RD6.8ESB2
D455-D462,D901-D903	1SS252
D463	11E2
S451	: ASH1001
L451,L452	: ATH-133
C521,C522	: ACH1127


4
5
6
7
8
9
A
B
C
D
8)
Q401 : BUFFER
OUTPUT
VIDEO
REC (EXCEPT VIDEO-1)
AUDIO
L
R
Q409 : BUFFER
Q405-Q407 : S-SIGNAL DET.
Q413,Q414 : VDP DET.
IC451 : VOLUME CONTROL
TONE
VOL/BAL
BIAS
VEE
IC 451
Q451,Q452 : BUFFER
IC452 : POWER AMP
IC 452
Q457,Q458 : AUDIO MUTE
Q455,Q456 : AUDIO MUTE DRIVE
Q453,Q454 : AUDIO MUTE
S451 : SPEAKER SELECTOR
S451
INT
EXT
A2
+35V (+32V)
+35V (+32V)
E
E
DEFLECTION ASSEMBLY
E7
(➡P42)
EXTERNAL SPEAKER
A11
INTERNAL SPEAKER
LE
NC
LT
L HIGH RANGE APT1003
A10
SP L
L
LE
RE
R
SP R
SC
MID-LOW RANGE APV1013
A12
RT
NC
RE
R HIGH RANGE APT1003
AUDIO OUTPUT (VARIABLE)
INP 0
INP 1
INP 2
C
VIDEO ASSEMBLY (3/3)
Ⓔ
(➡P38)
+13.5V
VIDEO
GND
FUNCTION
Y/C CONTROL
Y1
C1
+12V STB
VIDEO ASSEMBLY (2/3)
Ⓐ 1/2, 2/2
(➡P34,36)
TREBLE
BASS
BALANCE
VOLUME
A MUTE
VIDEO ASSEMBLY (3/3)
Ⓕ
(➡P37)
+9V
GND
+40V
+5V
+13.5V
Y1
TUNER ASSEMBLY
Z1
(➡P30)
+12V STB
+23V
-23V
P. GND
+40V
+13.5V
A7
+13.5V
+12V STB
+5V
+9V
+5V STB
GND
VIDEO ASSEMBLY (3/3)
Ⓖ 1/2, 2/2
(➡P37,38)
DEFLECTION ASSEMBLY
(➡P42)
E6

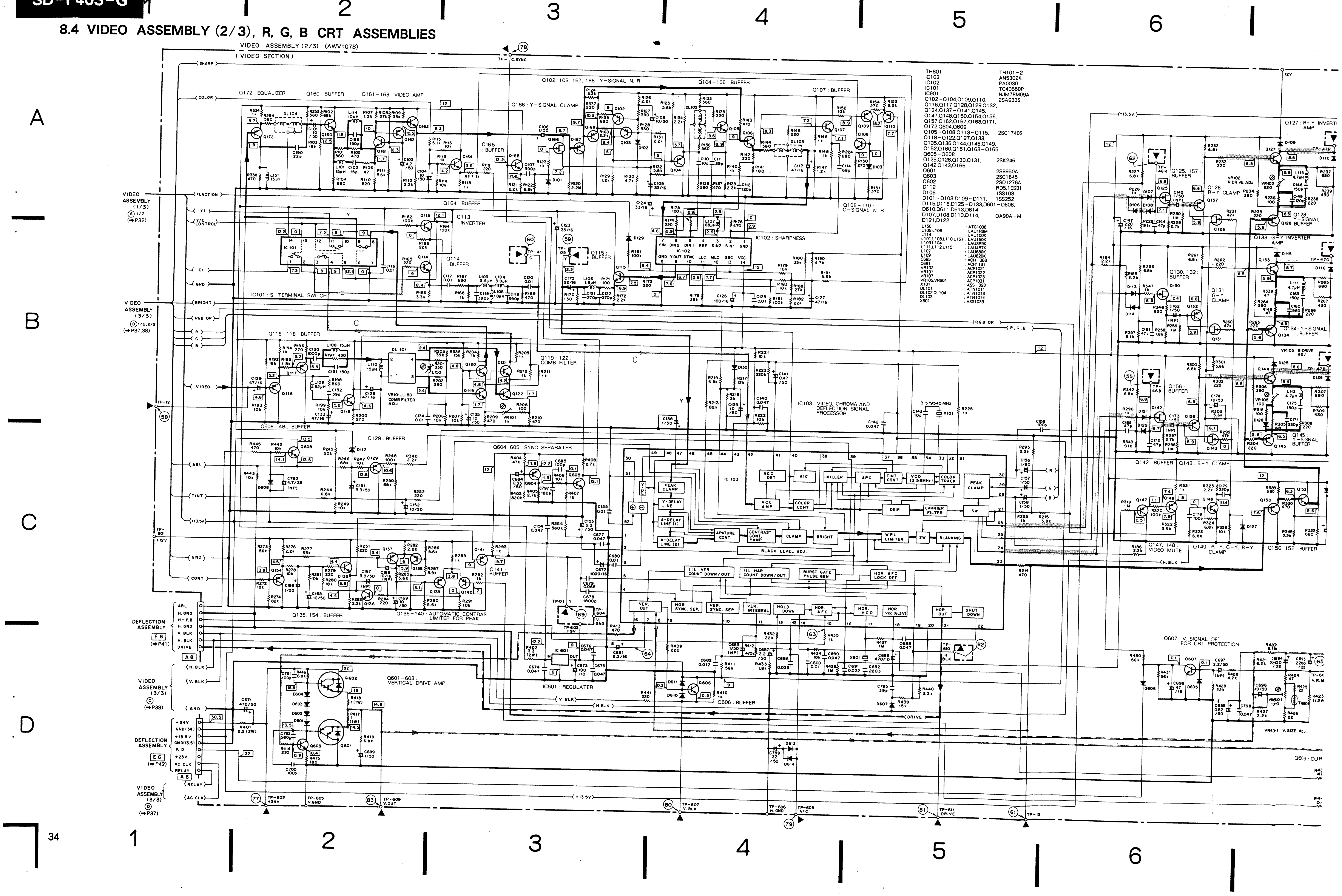
IC401	PA0040
IC451	TA7630P
IC452	TA8200AH
Q408,Q413,Q414	RN1203
Q401,Q407,Q455	2SA933S
Q405,Q406,Q451,Q452, Q456	2SC1740S
Q453,Q454,Q457,Q458	2SC3327
D905	HZS5BLL
D451 - D454	RD6.8ESB2
D455 - D462,D901 - D903	1SS252
D463	11E2
S451	: ASH1001
L451,L452	: ATH-133
C521,C522	: ACH1127

CONTROL LOGIC FOR IC401 (PA0040)

FUNCTION \ CONTROL Pin No.	16	19	24
TV	H	H	L
VDP	H	L	L
VIDEO-1	L	H	L
VIDEO-2	L	L	L
VIDEO-3	X	X	H

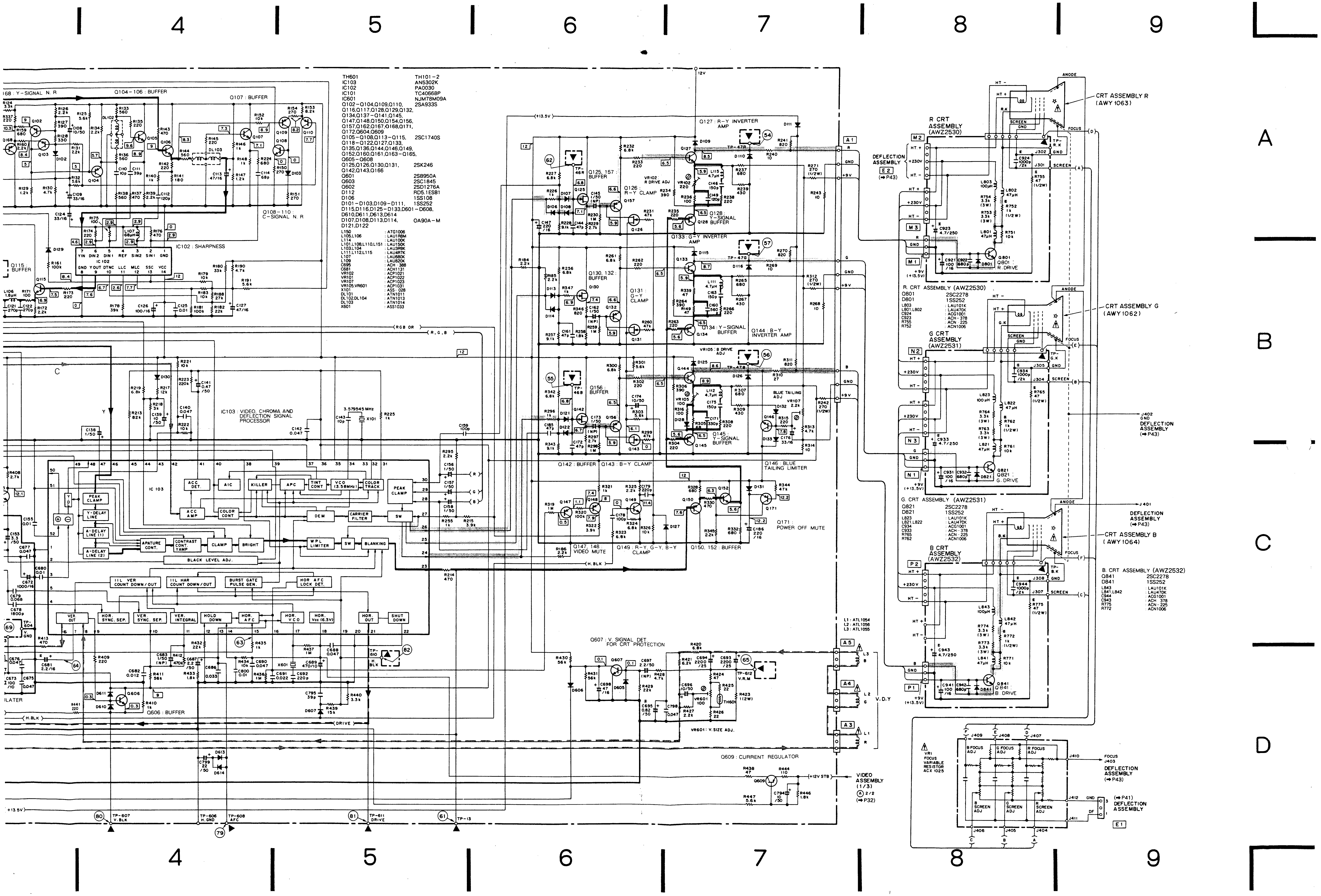
X : DON'T CARE

8.4 VIDEO ASSEMBLY (2/3), R, G, B CRT ASSEMBLIES


1
2
3
4
5
6
A
B
C
D
VIDEO ASSEMBLY (2/3) (AWV1078)
(VIDEO SECTION)
TP-C.SYNC
78
SHARP
COLOR
FUNCTION
Y1
Y/C CONTROL
C1
GND
BRIGHT
RGB OR
R
G
B
VIDEO
ABL
TINT
+13.5V
GND
CONT
VIDEO ASSEMBLY (1/3) Ⓐ 1/2 (➡P32)
VIDEO ASSEMBLY (3/3) Ⓑ 1/2,2/2 (➡P37,38)
Q172 : EQUALIZER
Q160 : BUFFER
Q161–163 : VIDEO AMP
Q166 : Y-SIGNAL CLAMP
Q165 : BUFFER
Q102, 103, 167, 168 : Y-SIGNAL N. R
Q104–106 : BUFFER
Q107 : BUFFER
Q108–110 : C-SIGNAL N. R
Q164 : BUFFER
Q113 : INVERTER
Q114 : BUFFER
Q115 : BUFFER
IC101 : S-TERMINAL SWITCH
IC102 : SHARPNESS
Q116–118 : BUFFER
DL101
Q119–122 : COMB FILTER
VR101, L150 : COMB FILTER ADJ
Q608 : ABL BUFFER
Q129 : BUFFER
Q604, 605 : SYNC SEPARATER
IC103 : VIDEO, CHROMA AND DEFLECTION SIGNAL PROCESSOR
3.579545 MHz
X101
ACC DET.
AIC
KILLER
APC
TINT CONT
VCO (3.58MHz)
COLOR TRACK
PEAK CLAMP
Y-DELAY LINE
A-DELAY LINE (1)
A-DELAY LINE (2)
ACC AMP
COLOR CONT
DEM
CARRIER FILTER
SW
APATURE CONT.
CONTRAST CONT. YAMP
CLAMP
BRIGHT
WPL LIMITER
BLANKING
BLACK LEVEL ADJ.
1/L VER COUNT DOWN/OUT
1/L HAR COUNT DOWN/OUT
BURST GATE PULSE GEN.
HOR AFC LOCK DET.
VER. OUT
HOR. SYNC. SEP.
VER. SYNC. SEP.
VER. INTEGRAL
HOLD DOWN
HOR. AFC
HOR. VCO
HOR. Vcc (6.3V)
HOR. OUT
SHUT DOWN
Q135, 154 : BUFFER
Q136–140 : AUTOMATIC CONTRAST LIMITER FOR PEAK
Q141 : BUFFER
TP-01
TP-603 +9V
TP-604 V.GND
IC601 : REGULATER
Q601–603 : VERTICAL DRIVE AMP
Q606 : BUFFER
TP-610 H.BLK
DEFLECTION ASSEMBLY E8 (➡P41)
ABL
H.GND
H-F.B
H.GND
V.BLK
H.BLK
DRIVE
A8
VIDEO ASSEMBLY (3/3) Ⓒ (➡P38)
DEFLECTION ASSEMBLY E6 (➡P42)
+34V
GND(34)
+13.5V
GND(13.5)
P.D
+23V
AC CLK
RELAY
A6
VIDEO ASSEMBLY (3/3) Ⓓ (➡P37)
H.BLK
V.BLK
GND
RELAY
AC CLK
DRIVE
TP-602 +34V
TP-605 V.GND
TP-609 V.OUT
TP-607 V.BLK
TP-606 H.GND
TP-608 AFC
TP-611 DRIVE
TP-13
TP-12
TP-601 +12V
TP-41
12V
Q127 : R-Y INVERTER AMP
Q125, 157 : BUFFER
Q126 : R-Y CLAMP
VR102 : R DRIVE ADJ
Q128 : Y-SIGNAL BUFFER
Q133 : G-Y INVERTER AMP
Q130, 132 : BUFFER
Q131 : G-Y CLAMP
Q134 : Y-SIGNAL BUFFER
VR105 : B DRIVE ADJ
Q156 : BUFFER
Q145 : Y-SIGNAL BUFFER
Q142 : BUFFER
Q143 : B-Y CLAMP
Q147, 148 : VIDEO MUTE
Q149 : R-Y, G-Y, B-Y CLAMP
Q150, 152 : BUFFER
Q607 : V. SIGNAL DET FOR CRT PROTECTION
VR601 : V.SIZE ADJ.
Q609 : CUR

TH601	TH101-2
IC103	AN5302K
IC102	PA0030
IC101	TC4066BP
IC601	NJM78M09A
Q102–Q104,Q109,Q110, Q116,Q117,Q128,Q129,Q132, Q134,Q137–Q141,Q145, Q147,Q148,Q150,Q154,Q156, Q157,Q162,Q167,Q168,Q171, Q172,Q604,Q609	2SA933S
Q105–Q108,Q113–Q115, Q118–Q122,Q127,Q133, Q135,Q136,Q144,Q146,Q149, Q152,Q160,Q161,Q163–Q165, Q605–Q608	2SC1740S
Q125,Q126,Q130,Q131, Q142,Q143,Q166	2SK246
Q601	2SB950A
Q603	2SC1845
Q602	2SD1276A
D112	RD5.1ESB1
D106	1SS108
D101–D103,D109–D111, D115,D116,D125–D133,D601–D608, D610,D611,D613,D614	1SS252
D107,D108,D113,D114, D121,D122	OA90A-M

L150 : ATG1006
L105,L106 : LAU1R8M
L114 : LAU100K
L101,L108,L110,L151 : LAU150K
L103,L104 : LAU3R9K
L111,L112,L115 : LAU4R7K
L107 : LAU680K
L109 : LAU820K
C695 : ACH · 388
C681 : ACH1131
VR102 : ACP1021
VR101 : ACP1022
VR107 : ACP1023
VR105,VR601 : ACP1031
X101 : ASS-028
DL101 : ATN1011
DL102,DL104 : ATN1013
DL103 : ATN1014
X601 : ASS1033


4
5
6
7
8
9
A
B
C
D
Y-SIGNAL N.R
Q104-106 : BUFFER
Q107 : BUFFER
Q108-110 C-SIGNAL N.R
IC102 : SHARPNESS
Q115 BUFFER
IC103 : VIDEO, CHROMA AND DEFLECTION SIGNAL PROCESSOR
3.579545 MHz
ACC DET.
AIC
KILLER
APC
TINT CONT
VCO (3.58MHz)
COLOR TRACK
PEAK CLAMP
ACC AMP
COLOR CONT
DEM
CARRIER FILTER
SW
PEAK CLAMP
Y-DELAY LINE
A-DELAY LINE (1)
A-DELAY LINE (2)
APATURE CONT.
CONTRAST CONT. YAMP
CLAMP
BRIGHT
WPL LIMITER
SW
BLANKING
BLACK LEVEL ADJ.
11L VER COUNT DOWN/OUT
11L HAR COUNT DOWN/OUT
BURST GATE PULSE GEN.
HOR AFC LOCK DET.
VER. OUT
HOR SYNC. SEP.
VER SYNC. SEP.
VER. INTEGRAL
HOLD DOWN
HOR. AFC
HOR. VCO
HOR. Vcc (6.3V)
HOR OUT
SHUT DOWN
Q606 : BUFFER
RGB OR
R, G, B
H.BLK
DRIVE
TP-607 V.BLK
TP-606 H.GND
TP-608 AFC
TP-611 DRIVE
TP-13
+13.5V
12V
Q127 : R-Y INVERTER AMP
Q125, 157 : BUFFER
Q126 : R-Y CLAMP
VR102 R DRIVE ADJ
Q128 : Y-SIGNAL BUFFER
Q133 : G-Y INVERTER AMP
Q130, 132 : BUFFER
Q131 : G-Y CLAMP
Q134 : Y-SIGNAL BUFFER
Q144 : B-Y INVERTER AMP
VR105 : B DRIVE ADJ
Q156 : BUFFER
Q145 : Y-SIGNAL BUFFER
BLUE TAILING ADJ
Q146 : BLUE TAILING LIMITER
Q142 : BUFFER
Q143 : B-Y CLAMP
Q147, 148 VIDEO MUTE
Q149 : R-Y, G-Y, B-Y CLAMP
Q150, 152 : BUFFER
Q171 : POWER OFF MUTE
Q607 : V. SIGNAL DET FOR CRT PROTECTION
VR601 : V. SIZE ADJ.
Q609 : CURRENT REGULATOR
VIDEO ASSEMBLY (1/3)
Ⓐ 2/2 (➡P32)
L1 : ATL1054
L2 : ATL1056
L3 : ATL1055
V.D.Y
A1
A3
A4
A5
R CRT ASSEMBLY (AWZ2530)
G CRT ASSEMBLY (AWZ2531)
B CRT ASSEMBLY (AWZ2532)
CRT ASSEMBLY R (AWY1063)
CRT ASSEMBLY G (AWY1062)
CRT ASSEMBLY B (AWY1064)
DEFLECTION ASSEMBLY E2 (➡P43)
Q801 : R.DRIVE
Q821 : G.DRIVE
Q841 : B DRIVE
ANODE
FOCUS
SCREEN
HT +
HT −
+230V
+9V (+13.5V)
GND
M1
M2
M3
N1
N2
N3
P1
P2
J402 GND DEFLECTION ASSEMBLY (➡P43)
J401 DEFLECTION ASSEMBLY (➡P43)
VR1 FOCUS VARIABLE RESISTOR ACX 1025
B FOCUS ADJ
G FOCUS ADJ
R FOCUS ADJ
B SCREEN ADJ
G SCREEN ADJ
R SCREEN ADJ
FOCUS J403 DEFLECTION ASSEMBLY (➡P43)
(➡P41) DEFLECTION ASSEMBLY
E1

TH601	TH101−2
IC103	AN5302K
IC102	PA0030
IC101	TC4066BP
IC601	NJM78M09A
Q102−Q104,Q109,Q110, Q116,Q117,Q128,Q129,Q132, Q134,Q137−Q141,Q145, Q147,Q148,Q150,Q154,Q156, Q157,Q162,Q167,Q168,Q171, Q172,Q604,Q609	2SA933S
Q105−Q108,Q113−Q115, Q118−Q122,Q127,Q133, Q135,Q136,Q144,Q146,Q149, Q152,Q160,Q161,Q163−Q165, Q605−Q608	2SC1740S
Q125,Q126,Q130,Q131, Q142,Q143,Q166	2SK246
Q601	2SB950A
Q603	2SC1845
Q602	2SD1276A
D112	RD5.1ESB1
D106	1SS108
D101−D103,D109−D111, D115,D116,D125−D133,D601−D608, D610,D611,D613,D614	1SS252
D107,D108,D113,D114, D121,D122	OA90A−M

L150	: ATG1006
L105,L106	: LAU1R8M
L114	: LAU100K
L101,L108,L110,L151	: LAU150K
L103,L104	: LAU3R9K
L111,L112,L115	: LAU4R7K
L107	: LAU680K
L109	: LAU820K
C695	: ACH - 388
C681	: ACH1131
VR102	: ACP1021
VR101	: ACP1022
VR107	: ACP1023
VR105,VR601	: ACP1031
X101	: ASS - 028
DL101	: ATN1011
DL102,DL104	: ATN1013
DL103	: ATN1014
X601	: ASS1033

R. CRT ASSEMBLY (AWZ2530)

Q801	2SC2278
D801	1SS252
L803	: LAU101K
L801,L802	: LAU470K
C924	: ACG1001
C923	: ACH - 378
R755	: ACN - 225
R752	: ACN1006

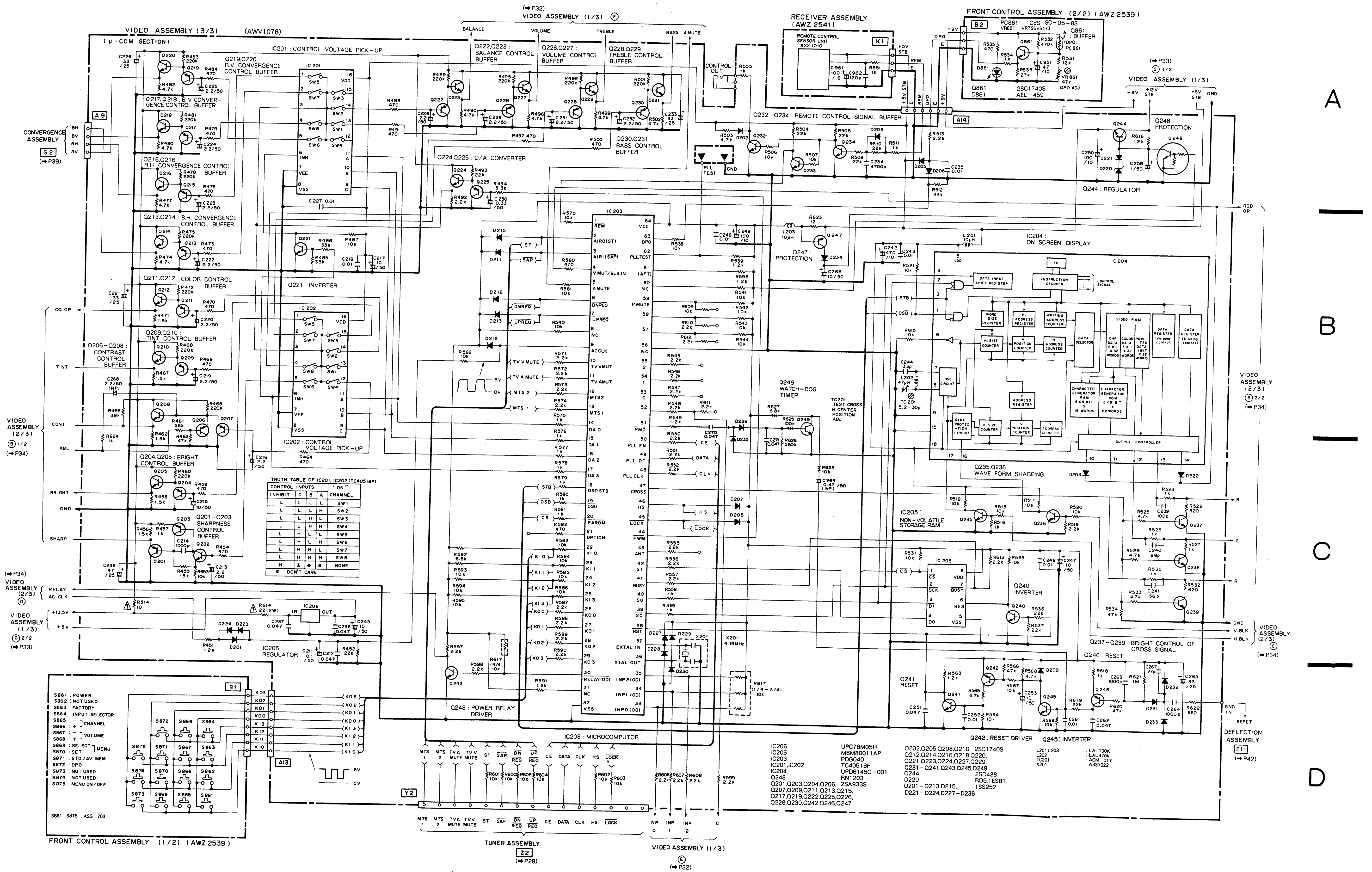
G. CRT ASSEMBLY (AWZ2531)

Q821	2SC2278
D821	1SS252
L823	: LAU101K
L821,L822	: LAU470K
C934	: ACG1001
C933	: ACH - 378
R765	: ACN - 225
R762	: ACN1006

B. CRT ASSEMBLY (AWZ2532)

Q841	2SC2278
D841	1SS252
L843	: LAU101K
L841,L842	: LAU470K
C944	: ACG1001
C943	: ACH 378
R775	: ACN - 225
R772	: ACN1006

8.5 VIDEO (3/3), FRONT CONTROL (1/2, 2/2), RECEIVER ASSEMBLIES


1
2
3
4
5
6
A
B
C
D
VIDEO ASSEMBLY (3/3) (AWV1078)
(μ-COM SECTION)
IC201 : CONTROL VOLTAGE PICK-UP
IC202 : CONTROL VOLTAGE PICK-UP
IC203 : MICROCOMPUTOR
IC204 : ON SCREEN DISPLAY
IC205 : NON-VOLATILE STORAGE RAM
IC206 : REGULATOR
Q219,Q220 : R.V. CONVERGENCE CONTROL BUFFER
Q217,Q218 : B.V. CONVERGENCE CONTROL BUFFER
Q215,Q216 : R.H. CONVERGENCE CONTROL BUFFER
Q213,Q214 : B.H. CONVERGENCE CONTROL BUFFER
Q211,Q212 : COLOR CONTROL BUFFER
Q209,Q210 : TINT CONTROL BUFFER
Q206-Q208 : CONTRAST CONTROL BUFFER
Q204,Q205 : BRIGHT CONTROL BUFFER
Q201-Q203 : SHARPNESS CONTROL BUFFER
Q221 : INVERTER
Q222,Q223 : BALANCE CONTROL BUFFER
Q226,Q227 : VOLUME CONTROL BUFFER
Q228,Q229 : TREBLE CONTROL BUFFER
Q230,Q231 : BASS CONTROL BUFFER
Q224,Q225 : D/A CONVERTER
Q232-Q234 : REMOTE CONTROL SIGNAL BUFFER
Q244 : REGULATOR
Q248 : PROTECTION
Q247 : PROTECTION
Q249 : WATCH-DOG TIMER
Q235,Q236 : WAVE FORM SHARPING
Q237-Q239 : BRIGHT CONTROL OF CROSS SIGNAL
Q240 : INVERTER
Q241 : RESET
Q242 : RESET DRIVER
Q243 : POWER RELAY DRIVER
Q245 : INVERTER
Q246 : RESET
TC201 : TEST CROSS H.CENTER POSITION ADJ
RECEIVER ASSEMBLY (AWZ 2541)
REMOTE CONTROL SENSOR UNIT AXX 1010
FRONT CONTROL ASSEMBLY (2/2) (AWZ 2539)
FRONT CONTROL ASSEMBLY (1/2) (AWZ 2539)
CONVERGENCE ASSEMBLY
VIDEO ASSEMBLY (1/3)
VIDEO ASSEMBLY (2/3)
TUNER ASSEMBLY
DEFLECTION ASSEMBLY
S861 : POWER
S862 : NOT USED
S863 : FACTORY
S864 : INPUT SELECTOR
S865 : -]CHANNEL
S866 : +
S867 : -]VOLUME
S868 : +
S869 : SELECT]MENU
S870 : SET
S871 : STD/AV MEM
S872 : DPO
S873 : NOT USED
S874 : NOT USED
S875 : MENU ON/OFF
S861 S875 : ASG 703

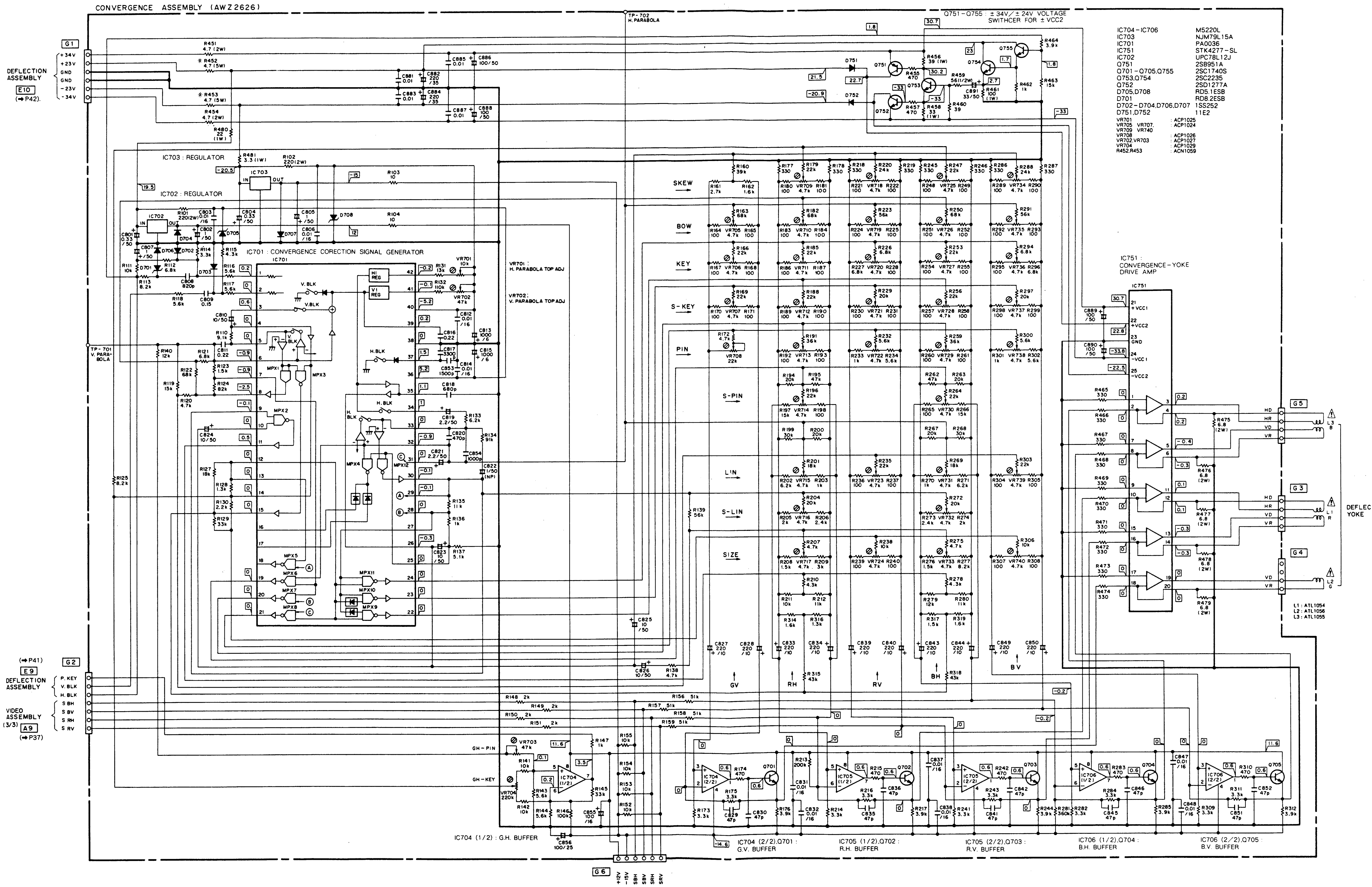
TRUTH TABLE OF IC201, IC202 (TC4051BP)

CONTROL INPUTS				"ON" CHANNEL
INHIBIT	C	B	A	
L	L	L	L	SW1
L	L	L	H	SW2
L	L	H	L	SW3
L	L	H	H	SW4
L	H	L	L	SW5
L	H	L	H	SW6
L	H	H	L	SW7
L	H	H	H	SW8
H	※	※	※	NONE

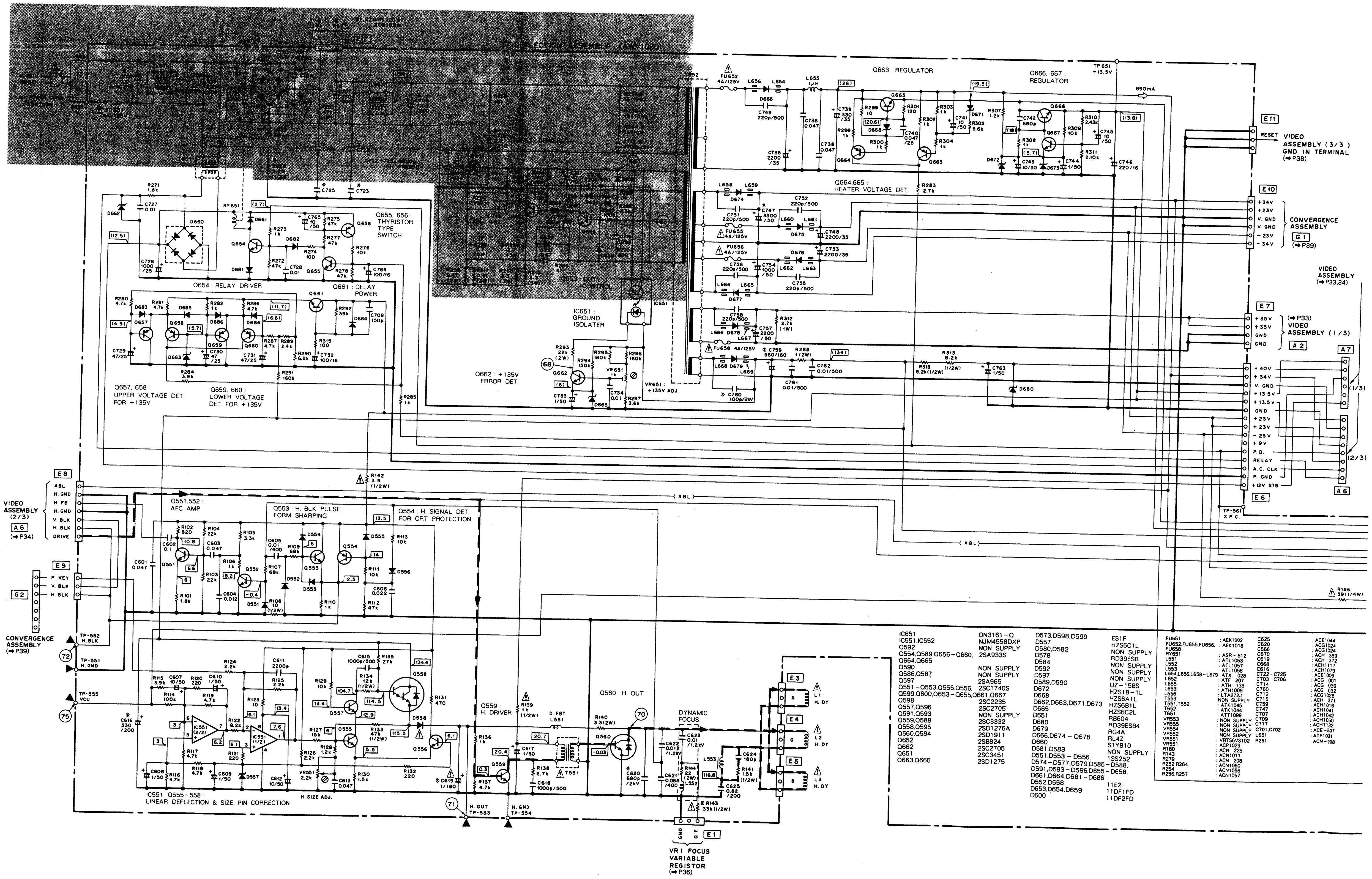
※ : DON'T CARE

IC206	UPC78M05H
IC205	M6M80011AP
IC203	PDG040
IC201,IC202	TC4051BP
IC204	UPD6145C-001
Q248	RN1203
Q201,Q203,Q204,Q206, Q207,Q209,Q211,Q213,Q215, Q217,Q219,Q222,Q225,Q226, Q228,Q230,Q242,Q246,Q247	2SA933S
Q202,Q205,Q208,Q210, Q212,Q214,Q216,Q218,Q220, Q221,Q223,Q224,Q227,Q229, Q231-Q241,Q243,Q245,Q249	2SC1740S
Q244	2SD438
D220	RD5.1ESB1
D201-D213,D215, D221-D224,D227-D236	1SS252
L201,L203	LAU100K
L202	LAU470K
TC201	ACM 017
X201	ASS1022

8.6 CONVERGENCE ASSEMBLY

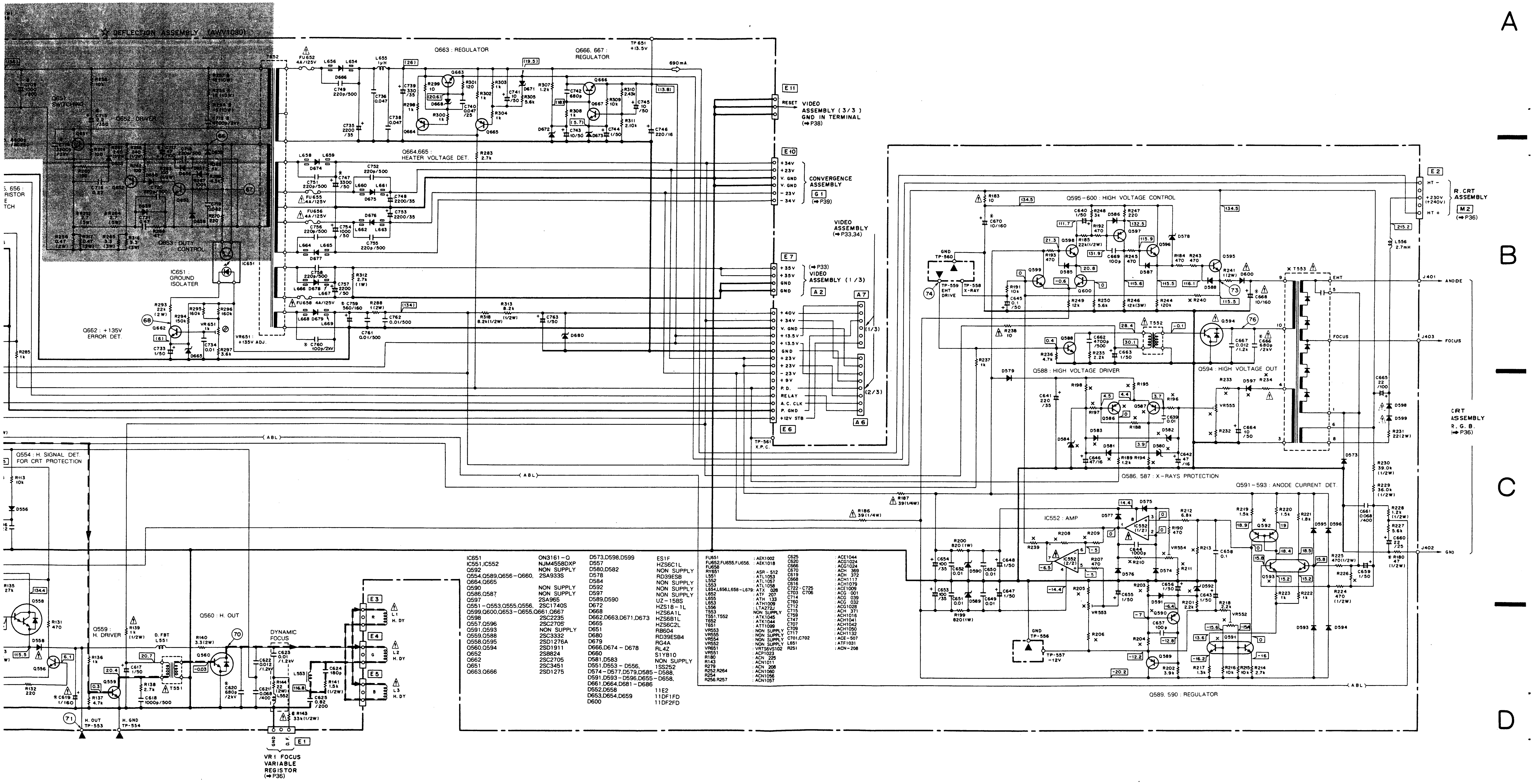

CONVERGENCE ASSEMBLY (AWZ2626)
DEFLECTION ASSEMBLY
E10
(→P42)
G1
+34V
+23V
GND
GND
-23V
-34V
TP-702
H.PARABOLA
Q751-Q755 : ±34V/±24V VOLTAGE SWITHCER FOR ±VCC2
IC704-IC706 M5220L
IC703 NJM79L15A
IC701 PA0036
IC751 STK4277-SL
IC702 UPC78L12J
Q751 2SB951A
Q701-Q705,Q755 2SC1740S
Q753,Q754 2SC2235
Q752 2SD1277A
D705,D708 RD5.1ESB
D701 RD8.2ESB
D702-D704,D706,D707 1SS252
D751,D752 11E2
VR701 : ACP1025
VR705 VR707, VR709 VR740 : ACP1024
VR708 : ACP1026
VR702,VR703 : ACP1027
VR704 : ACP1029
R452,R453 : ACN1059
IC703 : REGULATOR
IC702 : REGULATOR
IC701 : CONVERGENCE CORECTION SIGNAL GENERATOR
VR701 : H. PARABOLA TOP ADJ
VR702 : V. PARABOLA TOP ADJ
TP-701 V. PARABOLA
SKEW
BOW
KEY
S-KEY
PIN
S-PIN
LIN
S-LIN
SIZE
GV
RH
RV
BH
BV
IC751 : CONVERGENCE-YOKE DRIVE AMP
G5
G3
G4
DEFLECTION YOKE
L1 : ATL1054
L2 : ATL1056
L3 : ATL1055
(→P41)
E9
DEFLECTION ASSEMBLY
G2
P. KEY
V. BLK
H. BLK
VIDEO ASSEMBLY (3/3)
A9
(→P37)
S BH
S BV
S RH
S RV
GH-PIN
GH-KEY
IC704 (1/2) : G.H. BUFFER
IC704 (2/2),Q701 : G.V. BUFFER
IC705 (1/2),Q702 : R.H. BUFFER
IC705 (2/2),Q703 : R.V. BUFFER
IC706 (1/2),Q704 : B.H. BUFFER
IC706 (2/2),Q705 : B.V. BUFFER
G6
+12V
-15V
SBH
SBV
SRH
SRV

8.7 DEFLECTION ASSEMBLY


1
2
3
4
5
6
A
B
C
D
DEFLECTION ASSEMBLY (AWV1080)
Q663 : REGULATOR
Q666, 667 : REGULATOR
TP 651 +13.5V
690mA
Q664,665 : HEATER VOLTAGE DET.
Q655, 656 THYRISTOR TYPE SWITCH
Q654 : RELAY DRIVER
Q661 : DELAY POWER
Q657, 658 : UPPER VOLTAGE DET. FOR +135V
Q659, 660 : LOWER VOLTAGE DET. FOR +135V
IC651 : GROUND ISOLATER
Q653 : DUTY CONTROL
Q662 : +135V ERROR DET.
VR651 : +135V ADJ.
E11
RESET
VIDEO ASSEMBLY (3/3) GND IN TERMINAL (➡P38)
E10
+34V
+23V
V. GND
V. GND
−23V
−34V
CONVERGENCE ASSEMBLY
G1
(➡P39)
VIDEO ASSEMBLY (➡P33,34)
E7
+35V
+35V
GND
GND
(➡P33)
VIDEO ASSEMBLY (1/3)
A2
A7
+40V
+34V
V. GND
+13.5V
+13.5V
GND
+23V
+23V
−23V
+9V
P.D.
RELAY
A.C. CLK
P. GND
+12V STB
(1/3)
(2/3)
A6
E6
TP-561 X.P.C.
E8
ABL
H. GND
H. FB
H. GND
V. BLK
H. BLK
DRIVE
VIDEO ASSEMBLY (2/3)
A8
(➡P34)
E9
P. KEY
V. BLK
H. BLK
G2
CONVERGENCE ASSEMBLY (➡P39)
TP-552 H.BLK
TP-551 H.GND
TP-555 VCU
Q551,552 : AFC AMP
Q553 : H. BLK PULSE FORM SHARPING
Q554 : H. SIGNAL DET. FOR CRT PROTECTION
R142 3.9 (1/2W)
ABL
IC551, Q555−558 LINEAR DEFLECTION & SIZE, PIN CORRECTION
H. SIZE ADJ.
Q559 : H. DRIVER
D. FBT L551
Q560 : H. OUT
DYNAMIC FOCUS
T551
H. OUT TP-553
H. GND TP-554
E1
GND
D.F.
VR1 FOCUS VARIABLE REGISTOR (➡P36)
E3
E4
E5
L1 H. DY
L2 H. DY
L3 H. DY
R186 39(1/4W)

IC651	ON3161−Q	D573,D598,D599	ES1F
IC551,IC552	NJM4558DXP	D557	HZS6C1L
Q592	NON SUPPLY	D580,D582	NON SUPPLY
Q554,Q589,Q656−Q660, Q664,Q665	2SA933S	D578	RD39ESB
Q590	NON SUPPLY	D584	NON SUPPLY
Q586,Q587	NON SUPPLY	D592	NON SUPPLY
Q597	2SA965	D597	NON SUPPLY
Q551−Q553,Q555,Q556, Q599,Q600,Q653−Q655,Q661,Q667	2SC1740S	D589,D590	UZ−15BS
Q598	2SC2235	D672	HZS18−1L
Q557,Q596	2SC2705	D668	HZS6A1L
Q591,Q593	NON SUPPLY	D662,D663,D671,D673	HZS6B1L
Q559,Q588	2SC3332	D665	HZS6C2L
Q558,Q595	2SD1276A	D651	RB604
Q560,Q594	2SD1911	D680	RD39ESB4
Q652	2SB824	D679	RG4A
Q662	2SC2705	D666,D674 − D678	RL4Z
Q651	2SC3451	D660	S1YB10
Q663,Q666	2SD1275	D581,D583	NON SUPPLY
		D551,D553 − D556, D574−D577,D579,D585−D588, D591,D593−D596,D655−D658, D661,D664,D681−D686	1SS252
		D552,D558	11E2
		D653,D654,D659	11DF1FD
		D600	11DF2FD

FU651	: AEK1002	C625	: ACE1044
FU652,FU655,FU656, FU658	: AEK1018	C620	: ACG1024
RY651	: ASR − 512	C666	: ACG1024
L551	: ATL1053	C670	: ACH 369
L552	: ATL1057	C619	: ACH 372
L553	: ATL1058	C668	: ACH1117
L654,L656,L658 − L679	: ATX 028	C616	: ACH1079
L652	: ATF 207	C722 − C725	: ACE1009
L655	: ATH 133	C703 C706	: ACG 001
L653	: ATH1009	C714	: ACG 039
L556	: LTA272J	C760	: ACG 032
T553	NON SUPPLY	C712	: ACG1028
T551,T552	: ATK1045	C715	: ACH 371
T652	: ATK1044	C759	: ACH1016
T651	: ATT1099	C747	: ACH1041
VR553	: NON SUPPLY	C707	: ACH1042
VR555	: NON SUPPLY	C709	: ACH1050
VR554	: NON SUPPLY	C717	: ACH1132
VR552	: NON SUPPLY	C701,C702	: ACE−507
VR651	: VRTS6VS102	L651	: ATF1031
VR551	: ACP1023	R251	: ACN−208
R180	: ACN 225		
R143	: ACN1011		
R279	: ACN 208		
R252,R264	: ACN1060		
R254	: ACN1056		
R256,R257	: ACN1057		


DEFLECTION ASSEMBLY (AWV1080)
Q651 : SWITCHING
Q652 : DRIVER
Q653 : DUTY CONTROL
IC651 : GROUND ISOLATER
Q662 : +135V ERROR DET.
VR651 : +135V ADJ.
Q663 : REGULATOR
Q666, 667 : REGULATOR
Q664,665 : HEATER VOLTAGE DET.
TP651 +13.5V
690mA
E11
RESET
VIDEO ASSEMBLY (3/3)
GND IN TERMINAL
(➡P38)
E10
CONVERGENCE ASSEMBLY
G1
(➡P39)
VIDEO ASSEMBLY (➡P33,34)
E7
(➡P33)
VIDEO ASSEMBLY (1/3)
A2
A7
(1/3)
(2/3)
A6
E6
TP-561 X.P.C.
+40V
+34V
V.GND
+13.5V
GND
+23V
-23V
+9V
P.D.
RELAY
A.C. CLK
P.GND
+12V STB
Q595-600 : HIGH VOLTAGE CONTROL
GND TP-560
TP-559 EHT DRIVE
TP-558 X-RAY
Q588 : HIGH VOLTAGE DRIVER
Q594 : HIGH VOLTAGE OUT
T553
T552
EHT
FOCUS
J401 ANODE
J403 FOCUS
J402 GND
E2
HT -
+230V (+240V)
HT +
R.CRT ASSEMBLY
M2
(➡P36)
CRT ASSEMBLY R.G.B.
(➡P36)
Q586, 587 : X-RAYS PROTECTION
Q591-593 : ANODE CURRENT DET.
IC552 : AMP
Q589, 590 : REGULATOR
GND TP-556
TP-557 -12V
ABL
Q554 : H. SIGNAL DET. FOR CRT PROTECTION
Q559 : H. DRIVER
Q560 : H. OUT
D.FBT L551
T551
DYNAMIC FOCUS
H. OUT TP-553
H. GND TP-554
E1
VR1 FOCUS VARIABLE REGISTOR
(➡P36)
E3
E4
E5
L1 H. DY
L2 H. DY
L3 H. DY
R
G
B

IC651	ON3161-Q	D573,D598,D599	ES1F
IC551,IC552	NJM4558DXP	D557	HZS6C1L
Q592	NON SUPPLY	D580,D582	NON SUPPLY
Q554,Q589,Q656-Q660, Q664,Q665	2SA933S	D578	RD39ESB
Q590	NON SUPPLY	D584	NON SUPPLY
Q586,Q587	NON SUPPLY	D592	NON SUPPLY
Q597	2SA965	D597	NON SUPPLY
Q551-Q553,Q555,Q556, Q599,Q600,Q653-Q655,Q661,Q667	2SC1740S	D589,D590	UZ-15BS
Q598	2SC2235	D672	HZS18-1L
Q557,Q596	2SC2705	D668	HZS6A1L
Q591,Q593	NON SUPPLY	D662,D663,D671,D673	HZS6B1L
Q559,Q588	2SC3332	D665	HZS6C2L
Q558,Q595	2SD1276A	D651	RB604
Q560,Q594	2SD1911	D680	RD39ESB4
Q652	2SB824	D679	RG4A
Q662	2SC2705	D666,D674 - D678	RL4Z
Q651	2SC3451	D660	S1YB10
Q663,Q666	2SD1275	D581,D583	NON SUPPLY
		D551,D553 - D556, D574-D577,D579,D585-D588, D591,D593-D596,D655-D658, D661,D664,D681-D686	1SS252
		D552,D558	11E2
		D653,D654,D659	11DF1FD
		D600	11DF2FD

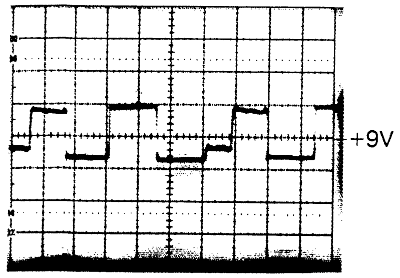
FU651	: AEK1002	C625	: ACE1044
FU652,FU655,FU656, FU658	: AEK1018	C620	: ACG1024
RY651	: ASR - 512	C666	: ACG1024
L551	: ATL1053	C670	: ACH 369
L552	: ATL1057	C619	: ACH 372
L553	: ATL1058	C668	: ACH1117
L654,L656,L658-L679	: ATX 028	C616	: ACH1079
L652	: ATF 207	C722 - C725	: ACE1009
L655	: ATH 133	C703 C706	: ACG 001
L653	: ATH1009	C714	: ACG 039
L556	: LTA272J	C760	: ACG 032
T553	NON SUPPLY	C712	: ACG1028
T551,T552	: ATK1045	C715	: ACH 371
T652	: ATK1044	C759	: ACH1016
T651	: ATT1099	C747	: ACH1041
VR553	: NON SUPPLY	C707	: ACH1042
VR555	: NON SUPPLY	C709	: ACH1050
VR554	: NON SUPPLY	C717	: ACH1132
VR552	: NON SUPPLY	C701,C702	: ACE-507
VR651	: VRTS6VS102	L651	: ATF1031
VR551	: ACP1023	R251	: ACN-208
R180	: ACN 225		
R143	: ACN1011		
R279	: ACN 208		
R252,R264	: ACN1060		
R254	: ACN1056		
R256,R257	: ACN1057		

The waveforms at each position

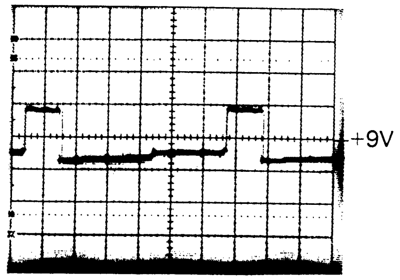
Input signal ;

(54) – (81) : color bar VDP input
Picture quality : standard
Range : DC range (without notice)

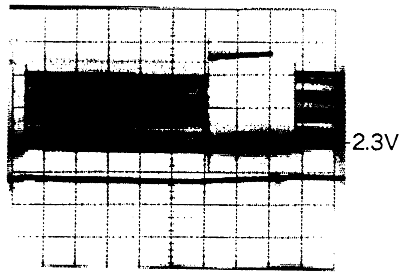
(54) **TP-47R**
V : 1V/div, H : 10μsec/div



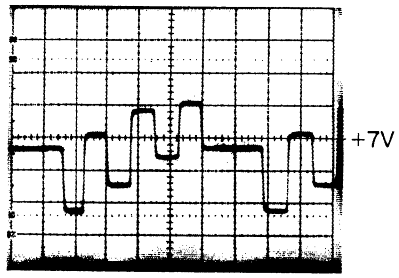
(57) **TP-47G**
V : 1V/div, H : 10μsec/div



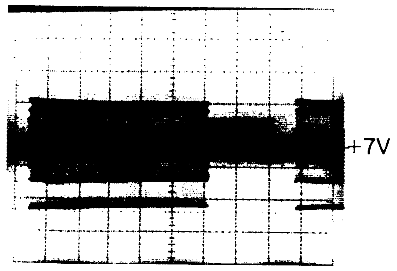
(59) **TP-05**
V : 100mV/div, **H : 2msec/div**



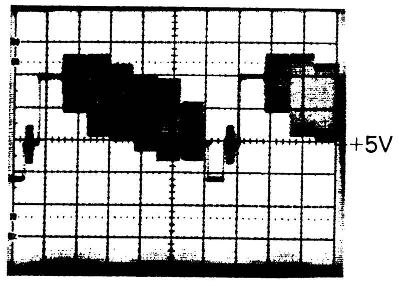
(55) **TP-46B**
V : 1V/div, **H : 10μsec/div**



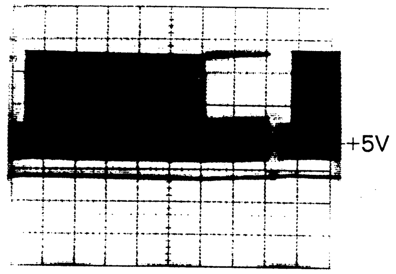
V : 1V/div, **H : 2μsec/div**



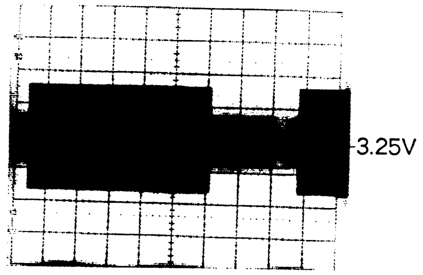
(58) **TP-12**
V : 500mV/div, **H : 10μsec/div**



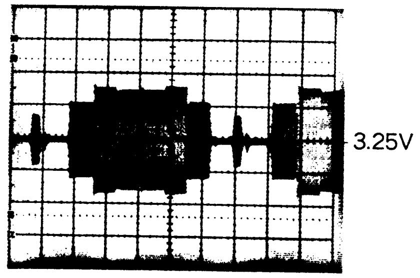
V : 500mV/div, **H : 2mV/div**



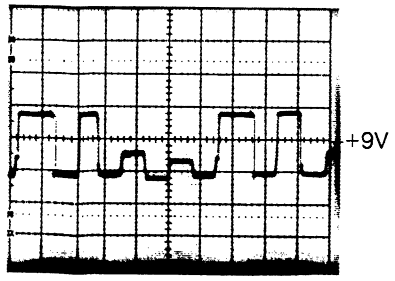
(60) **TP-41**
V : 100mV/div, **H : 2msec/div**



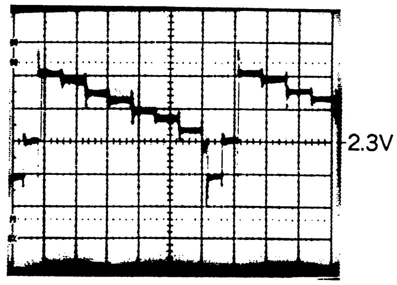
V : 100mV/div, **H : 10μsec/div**



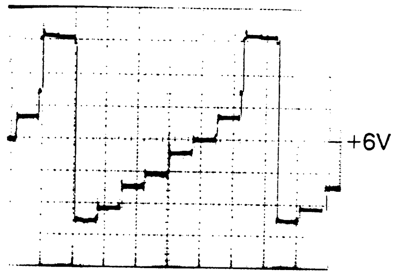
(56) **TP-47B**
V : 1V/div, H : 10μsec/div



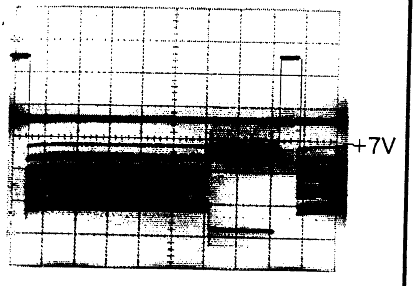
(59) **TP-05**
V : 100mV/div, **H : 10μsec/div**



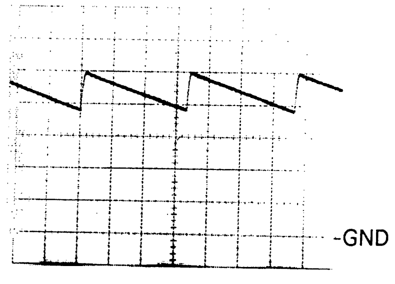
(61) **TP-13**
V : 500mV/div, H : 10μsec/div



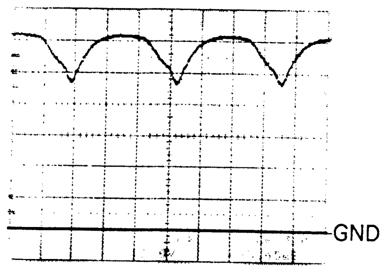
(61) **TP-13**
V : 1V/div, H : 2msec/div



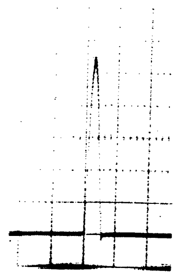
(64) **C681 ⊕ side**
for TP-604 (V.GND)
V : 1V/div, H : 5msec/div



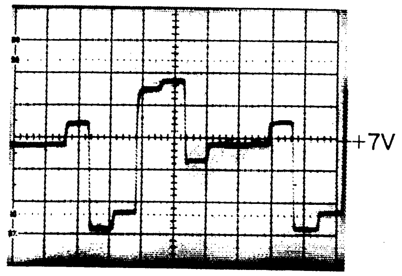
(68) **Q662 Collector for V.GND**
V : 20V/div, H : 5msec/div



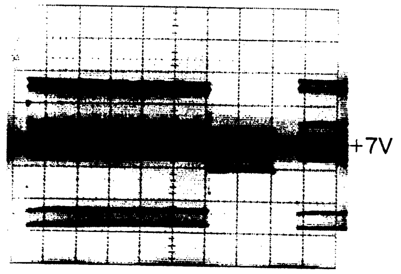
(70) **Q560 Collect**
for TP-554
V : 200V/div,



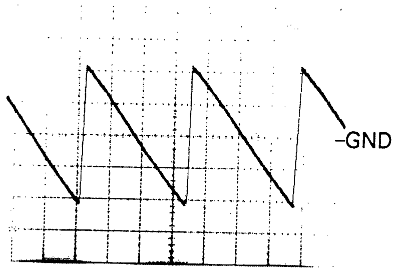
(62) **TP-46R**
V : 1V/div, **H : 10μsec/div**



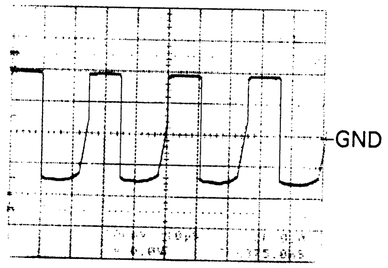
V : 1V/div, **H : 2msec/div**



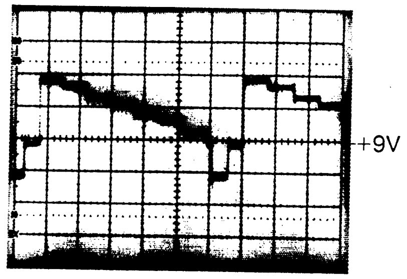
(65) **TP-612 (V.R.M)**
for TP-605 (V.GND)
V : 0.5V/div, H : 5msec/div



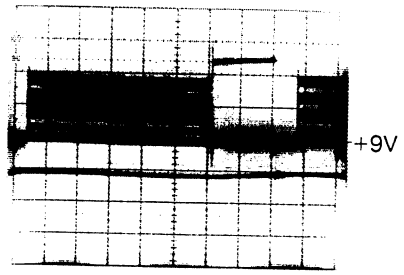
(66) **D655 Cathode**
V : 5V/div, H : 10μsec/div



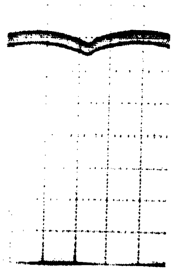
(69) **TP-01**
V : 500mV/div, **H : 10μsec/div**



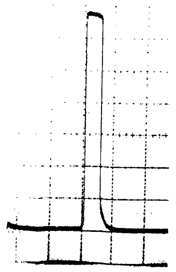
V : 500mV/div, **H : 2msec/div**



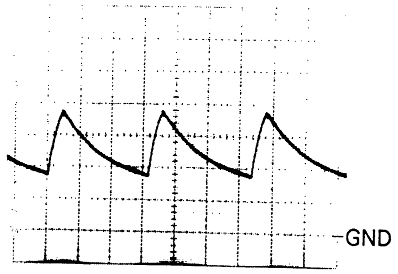
(71) **TP-553 (H.O**
for TP-554
V : 20V/div,



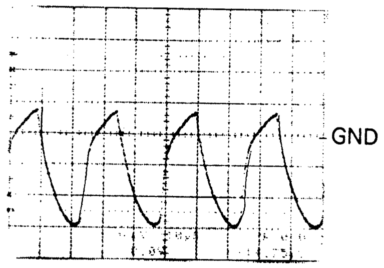
(72) **TP-552 (H.B**
for TP-551
V : 2V/div,



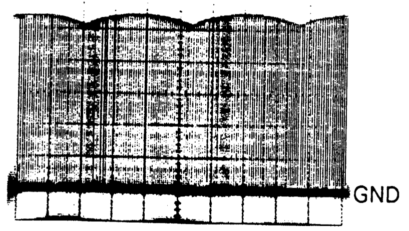
(63) **IC103 Pin 15**
for TP-606(H.GND)
V : 1V/div, H : 20μsec/div



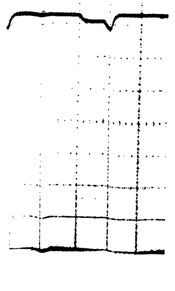
(67) **C719 (both sides)**
V : 2V/div, H : 10μsec/div



(70) **Q560 Collector**
for TP-554 (H.GND)
V : 200V/div, H : 5msec/div



(73) **Q595 Emitte**
for TP-560
V : 20V/div,



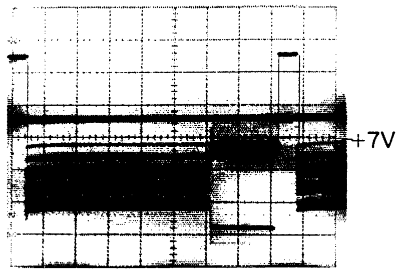
2.3V

.25V

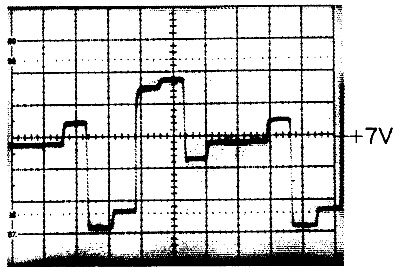
25V

+6V

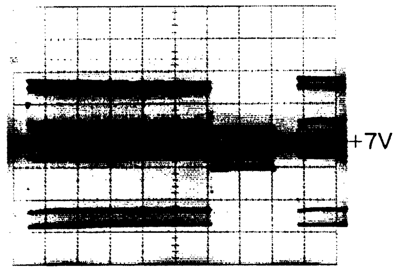
(61) TP-13
V : 1V/div, H : 2msec/div



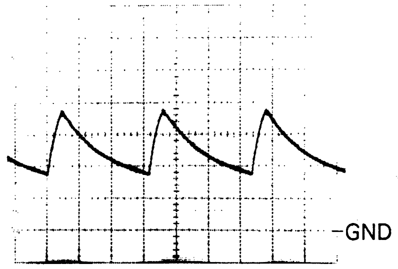
(62) TP-46R
V : 1V/div, H : 10μsec/div



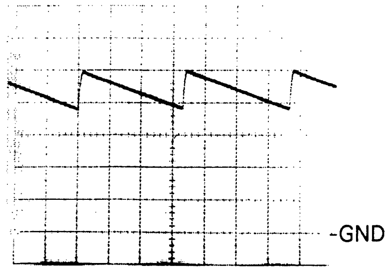
V : 1V/div, H : 2msec/div



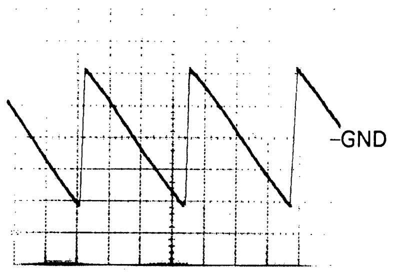
(63) IC103 Pin 15
for TP-606(H.GND)
V : 1V/div, H : 20μsec/div



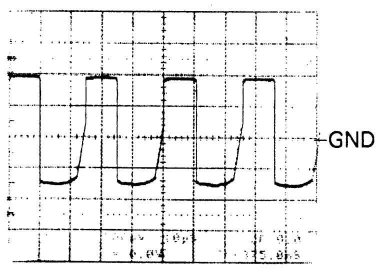
(64) C681 ⊕ side
for TP-604 (V.GND)
V : 1V/div, H : 5msec/div



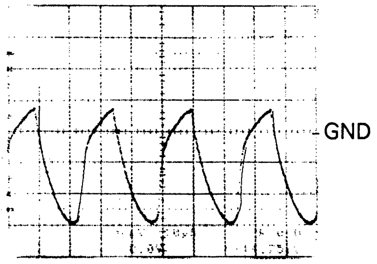
(65) TP-612 (V.R.M)
for TP-605 (V.GND)
V : 0.5V/div, H : 5msec/div



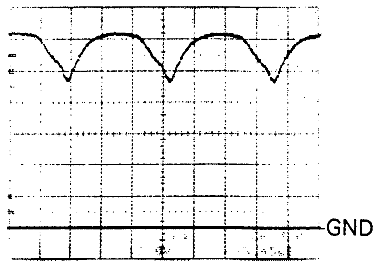
(66) D655 Cathode
V : 5V/div, H : 10μsec/div



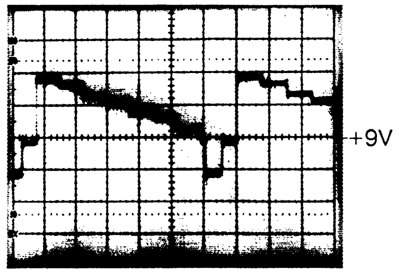
(67) C719 (both sides)
V : 2V/div, H : 10μsec/div



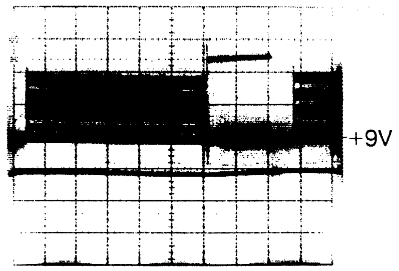
(68) Q662 Collector for V.GND
V : 20V/div, H : 5msec/div



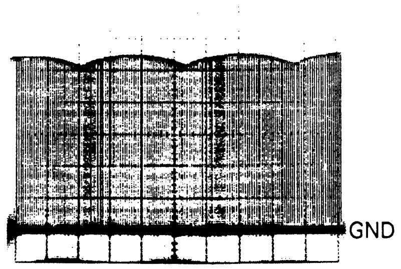
(69) TP-01
V : 500mV/div, H : 10μsec/div



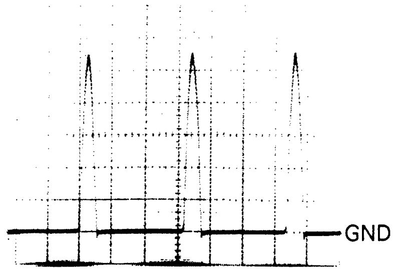
V : 500mV/div, H : 2msec/div



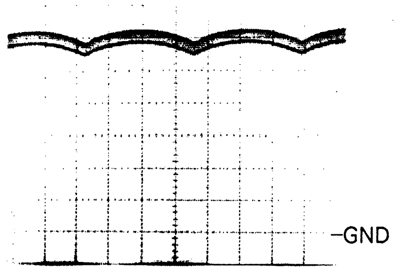
(70) Q560 Collector
for TP-554 (H.GND)
V : 200V/div, H : 5msec/div



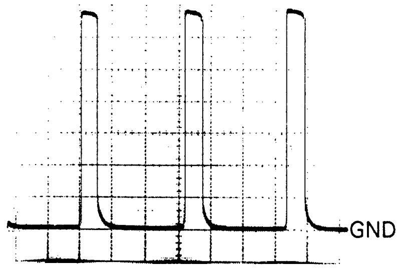
(70) Q560 Collector
for TP-554 (H.GND)
V : 200V/div, H : 20μsec/div



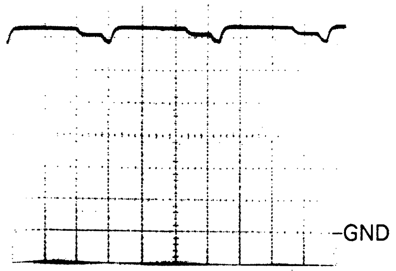
(71) TP-553 (H.OUT)
for TP-554 (H.GND)
V : 20V/div, H : 5msec/div



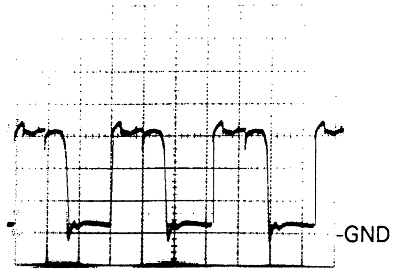
(72) TP-552 (H.BLK)
for TP-551 (H.GND)
V : 2V/div, H : 20μsec/div



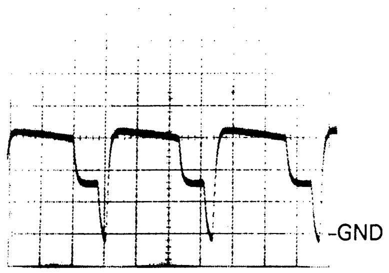
(73) Q595 Emitter
for TP-560 (GND)
V : 20V/div, H : 5msec/div



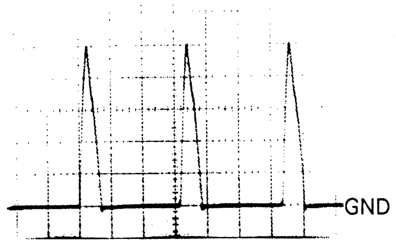
(74) TP-559 (EHT.DRIVE)
for TP-560 (GND)
V : 0.2V/div, H : 20μsec/div



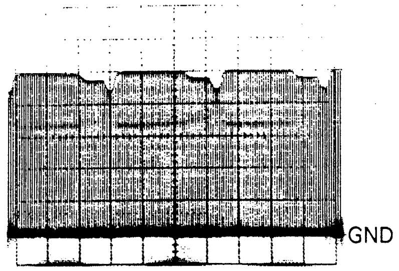
(75) TP-555 (VCU)
for TP-551 (H.GND)
V : 0.5V/div, H : 5msec/div



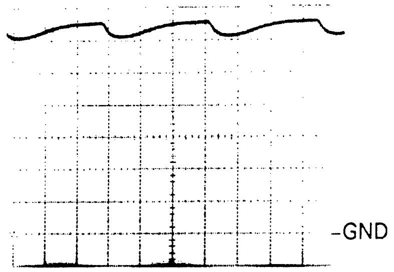
(76) Q594 Collector
for TP-560 (GND)
V : 200V/div, H : 20μsec/div



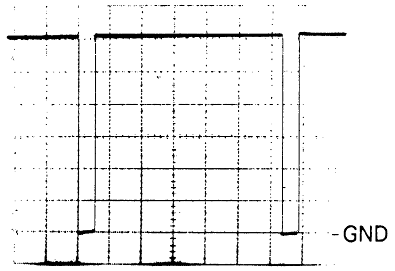
V : 200V/div, H : 5msec/div



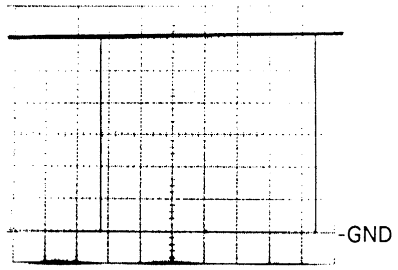
(77) TP-602 (+34V)
for TP-605 (V.GND)
V : 5V/div, H : 5msec/div



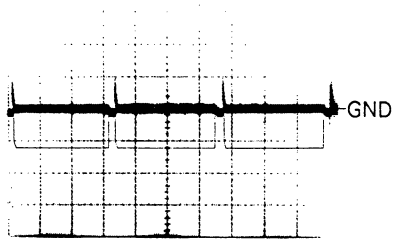
(78) TP-C SYNC for TP-GND
V : 2V/div, H : 10μsec/div



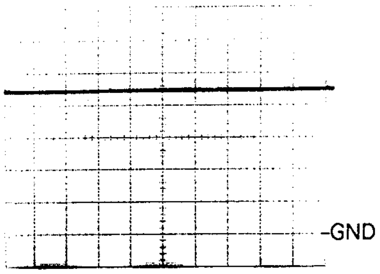
V : 2V/div, H : 5msec/div



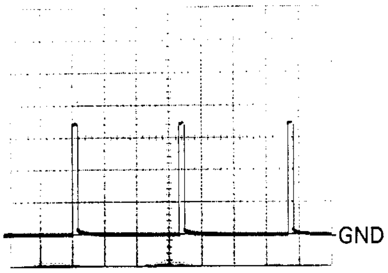
(79) TP-608 (AFC)
for TP-606 (H.GND)
V : 50mV/div, H : 5msec/div
AC range



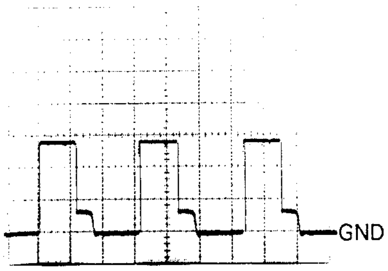
(79) **TP-608 (AFC)**
for TP-606 (H.GND)
V : 1V/div, H : 5msec/div



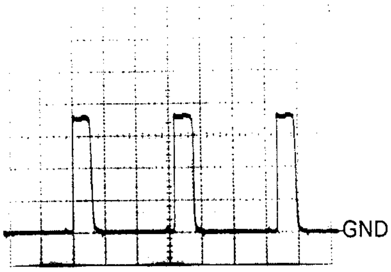
(80) **TP-607 (V. BLK)**
for TP-604 (V.GND)
V : 2V/div, H : 5msec/div



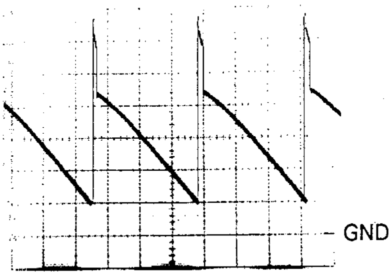
(81) **TP-611 (DRIVE)**
for TP-606 (H.GND)
V : 1V/div, H : 20µsec/div

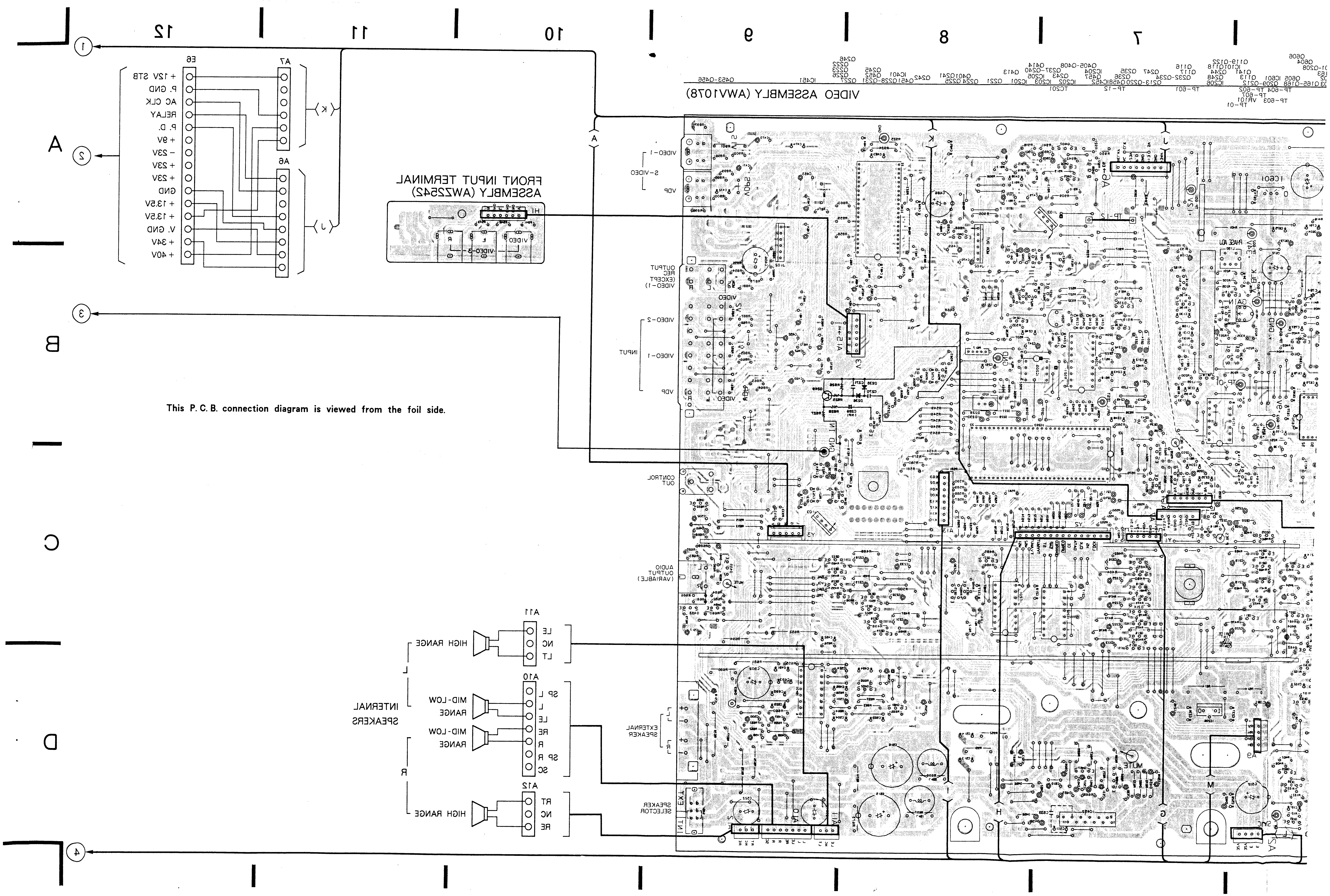


(82) **TP-610 (H. BLK)**
for TP-606 (H.GND)
V : 0.5V/div, H : 20µsec/div



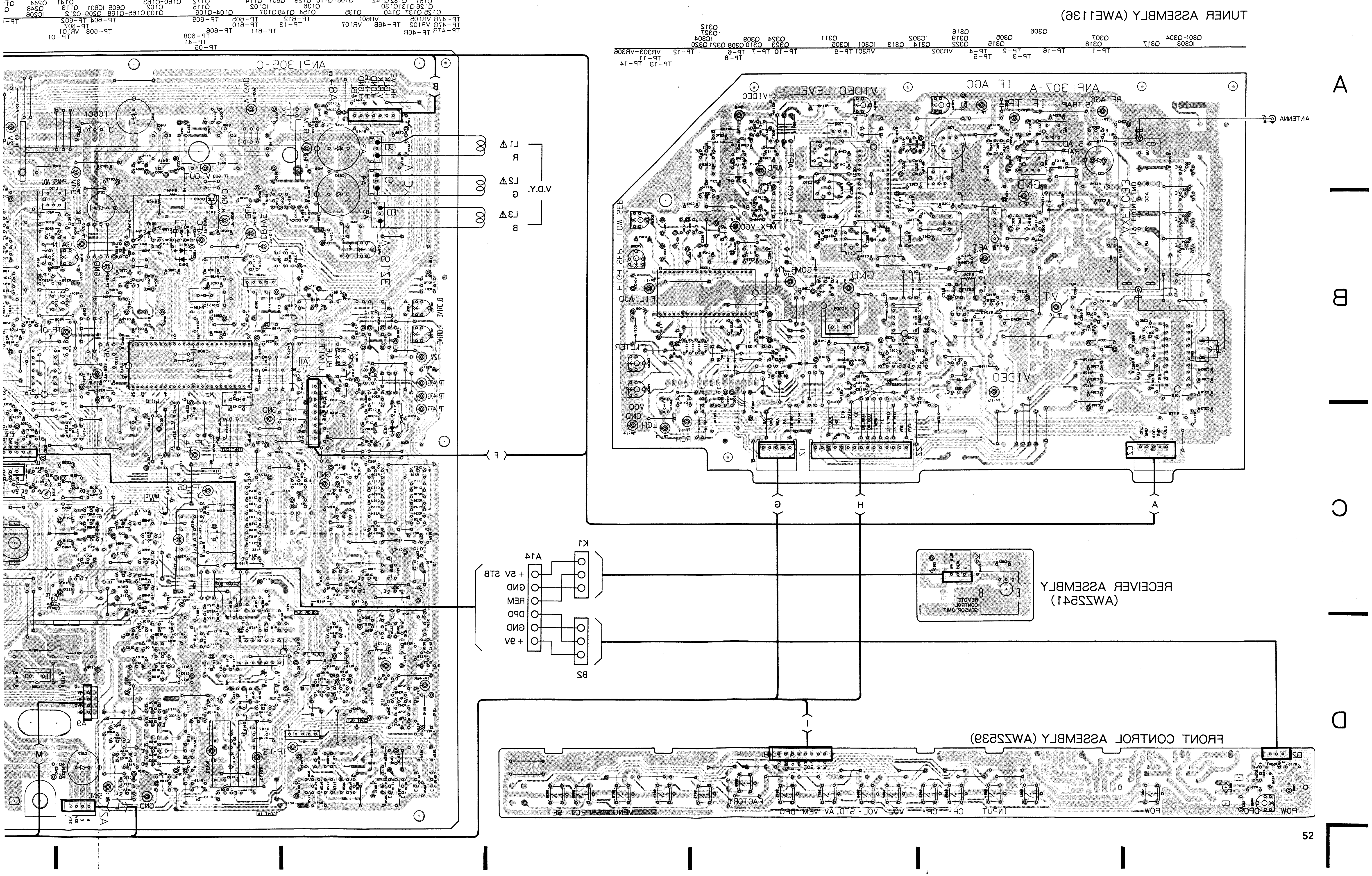
(83) **TP-609 (V. OUT)**
for TP-605 (V.GND)
V : 5V/div, H : 5msec/div




12
11
10
9
8
7
A
B
C
D
①
②
③
④
VIDEO ASSEMBLY (AWV1078)
FRONT INPUT TERMINAL ASSEMBLY (AWZ2542)
H1
VIDEO
L
R
VIDEO-3
E6
A7
A6
+12V STB
P. GND
AC CLK
RELAY
P. D.
+9V
−23V
+23V
+23V
GND
+13.5V
+13.5V
V. GND
+34V
+40V
K
J
A
VIDEO-1
S-VIDEO
VDP
OUTPUT REC (EXCEPT VIDEO-1)
VIDEO-2
VIDEO-1
INPUT
VDP
CONTROL OUT
AUDIO OUTPUT (VARIABLE)
EXTERNAL SPEAKER
SPEAKER SELECTOR
A11
LE
NC
LT
HIGH RANGE
A10
SP L
L
LE
RE
R
SP R
SC
MID-LOW RANGE
MID-LOW RANGE
INTERNAL SPEAKERS
L
R
A12
RT
NC
RE
HIGH RANGE
TP-12
MUTE
GND
IC601
TP-601
TC201

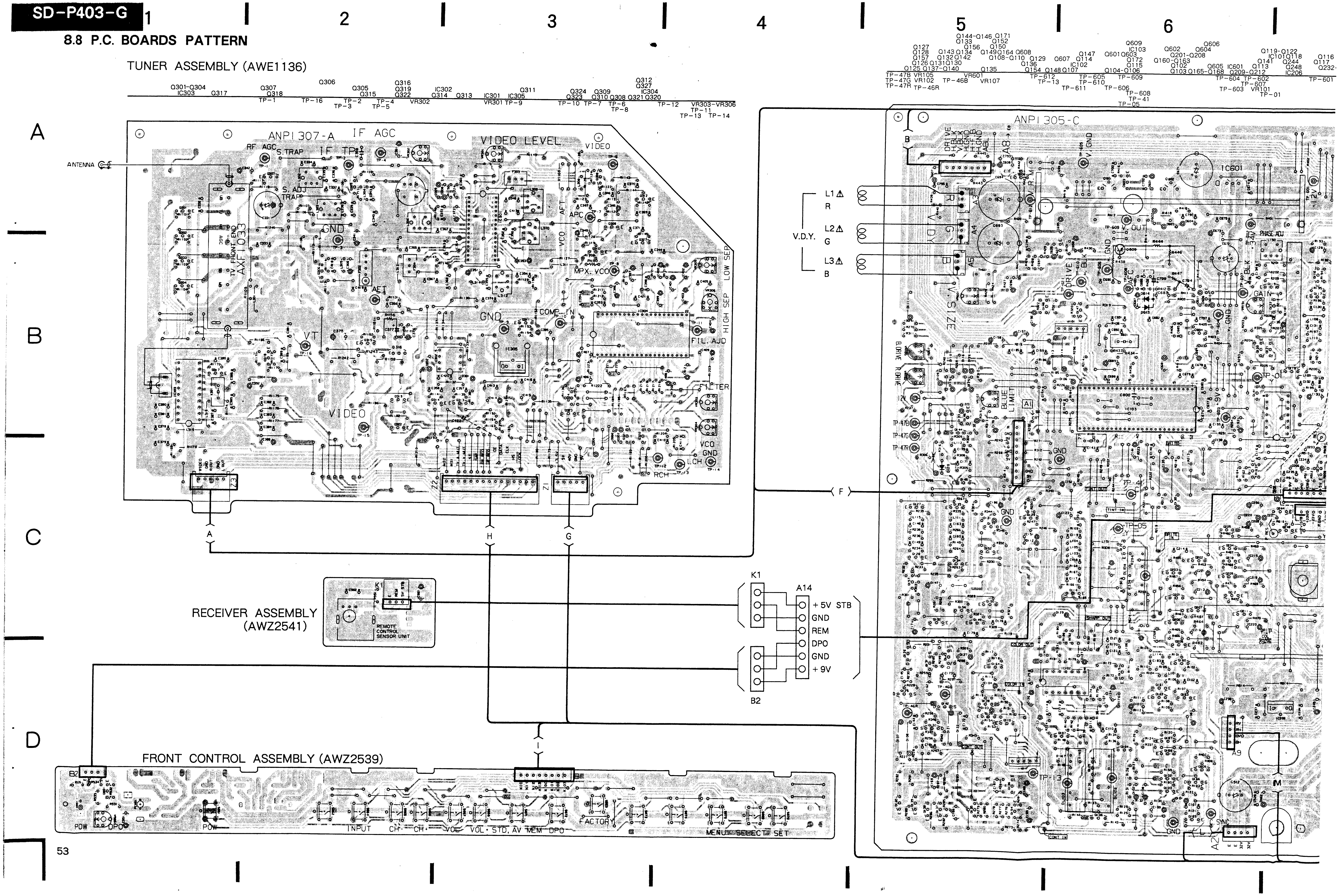
This P. C. B. connection diagram is viewed from the foil side.

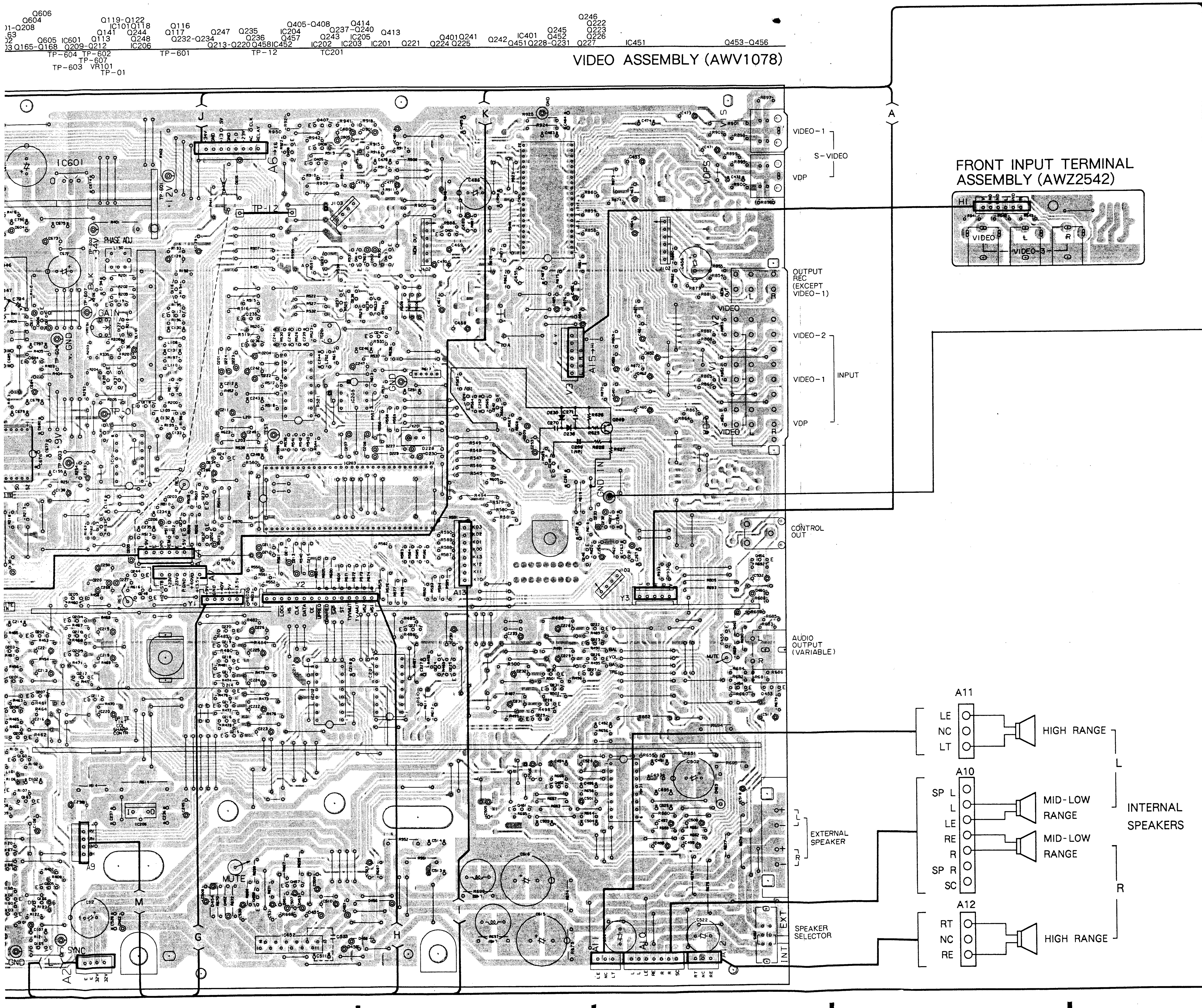
8.8 P.C. BOARDS PATTERN

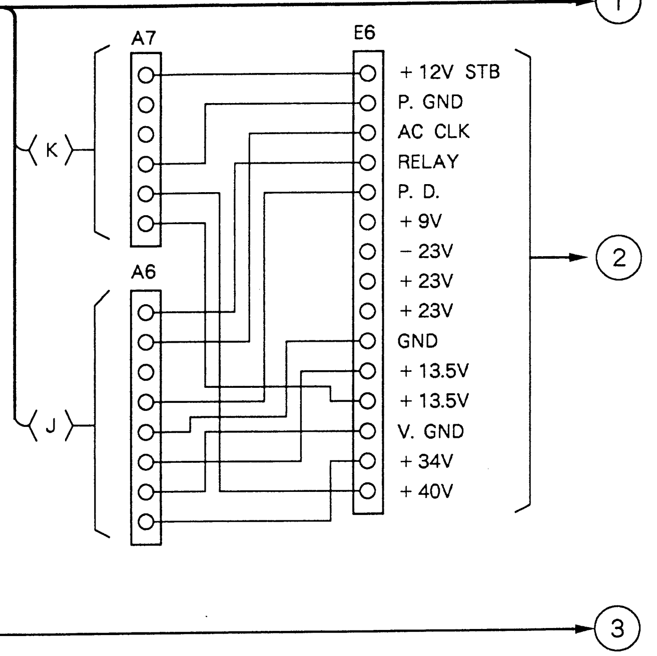

TUNER ASSEMBLY (AWE1136)
ANP1307-A
ANP1305-C
ANTENNA
VIDEO LEVEL
IF AGC
RF AGC
VIDEO
GND
V.D.Y.
L1
R
L2
G
L3
B
A14
+5V STB
GND
REM
DPO
GND
+9V
K1
B2
RECEIVER ASSEMBLY (AWZ2541)
FRONT CONTROL ASSEMBLY (AWZ2539)
POW
DPO
INPUT
CH
CH+
VOL-
VOL+
STD, AV
MEM
DPO
FACTORY
MENU/SELECT
SET
A
B
C
D
F
G
H
I
M
1
2
3
4
5
6

8.8 P.C. BOARDS PATTERN

TUNER ASSEMBLY (AWE1136)

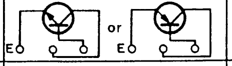
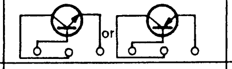
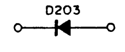
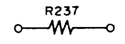
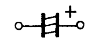
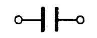

1
2
3
4
5
6
A
B
C
D
ANTENNA
ANP1307-A
IF AGC
RF AGC
S.TRAP
IF TP
VIDEO LEVEL
VIDEO
S. ADJ
TRAP
GND
AFT
APC
VCO
MPX. VCO
TV FRONT END
AXF1033
VT
COMP. IN
LOW SEP
HIGH SEP
FIL. AJD
FILTER
VCO
GND
LCH
RCH
Z3
Z2
Z1
A
H
G
F
ANP1305-C
L1
R
L2
G
L3
B
V.D.Y.
IC601
V. OUT
PHASE ADJ
GAIN
V. SIZE
B. DRIVE
R. DRIVE
BLUE LIMIT
IC103
TP-47B
TP-47G
TP-47R
TP-05
TP-13
A9
A2
SYNC
M
RECEIVER ASSEMBLY
(AWZ2541)
REMOTE
CONTROL
SENSOR UNIT
K1
A14
+5V STB
GND
REM
DPO
GND
+9V
B2
I
FRONT CONTROL ASSEMBLY (AWZ2539)
POW
DPO
INPUT
CH-
CH+
VOL-
VOL+
STD. AV
MEM
DPO
FACTORY
MENU
SELECT
SET


7
8
9
10
11
12
Q606
Q604
)1-Q208
63
)2
)3 Q165-Q168
Q605
IC601
Q209-Q212
Q119-Q122
IC101 Q118
Q141
Q113
Q244
Q248
IC206
Q116
Q117
Q232-Q234
Q247
Q235
Q236
Q213-Q220
Q458
IC452
IC204
Q457
Q405-Q408
Q243
IC202
Q414
Q237-Q240
IC205
IC203
Q413
IC201
Q221
Q401 Q241
Q224 Q225
Q242
IC401
Q451
Q245
Q452
Q228-Q231
Q246
Q222
Q223
Q226
Q227
IC451
Q453-Q456
TP-604
TP-602
TP-607
TP-603
VR101
TP-01
TP-601
TP-12
TC201
VIDEO ASSEMBLY (AWV1078)
FRONT INPUT TERMINAL ASSEMBLY (AWZ2542)
H1
VIDEO
L
R
VIDEO-3
J
K
A
A6
A15
A13
A11
A10
A12
A9
A2
Y1
Y2
Y3
M
G
H
I
IC601
12V
PHASE ADJ
BLK
GAIN
GND
TP-01
9V
MUTE
SYNC
GND
VIDEO-1
S-VIDEO
VDP
OUTPUT REC (EXCEPT VIDEO-1)
VIDEO-2
VIDEO-1
INPUT
VDP
CONTROL OUT
AUDIO OUTPUT (VARIABLE)
EXTERNAL SPEAKER
L
R
SPEAKER SELECTOR
EXT
INT
LE
NC
LT
HIGH RANGE
SP L
L
LE
RE
R
SP R
SC
MID-LOW RANGE
MID-LOW RANGE
RT
NC
RE
HIGH RANGE
L
R
INTERNAL SPEAKERS
①
③
④
A
B
C
D


①
②
③
A7
E6
K
J
A6
+12V STB
P. GND
AC CLK
RELAY
P. D.
+9V
−23V
+23V
+23V
GND
+13.5V
+13.5V
V. GND
+34V
+40V

NOTE

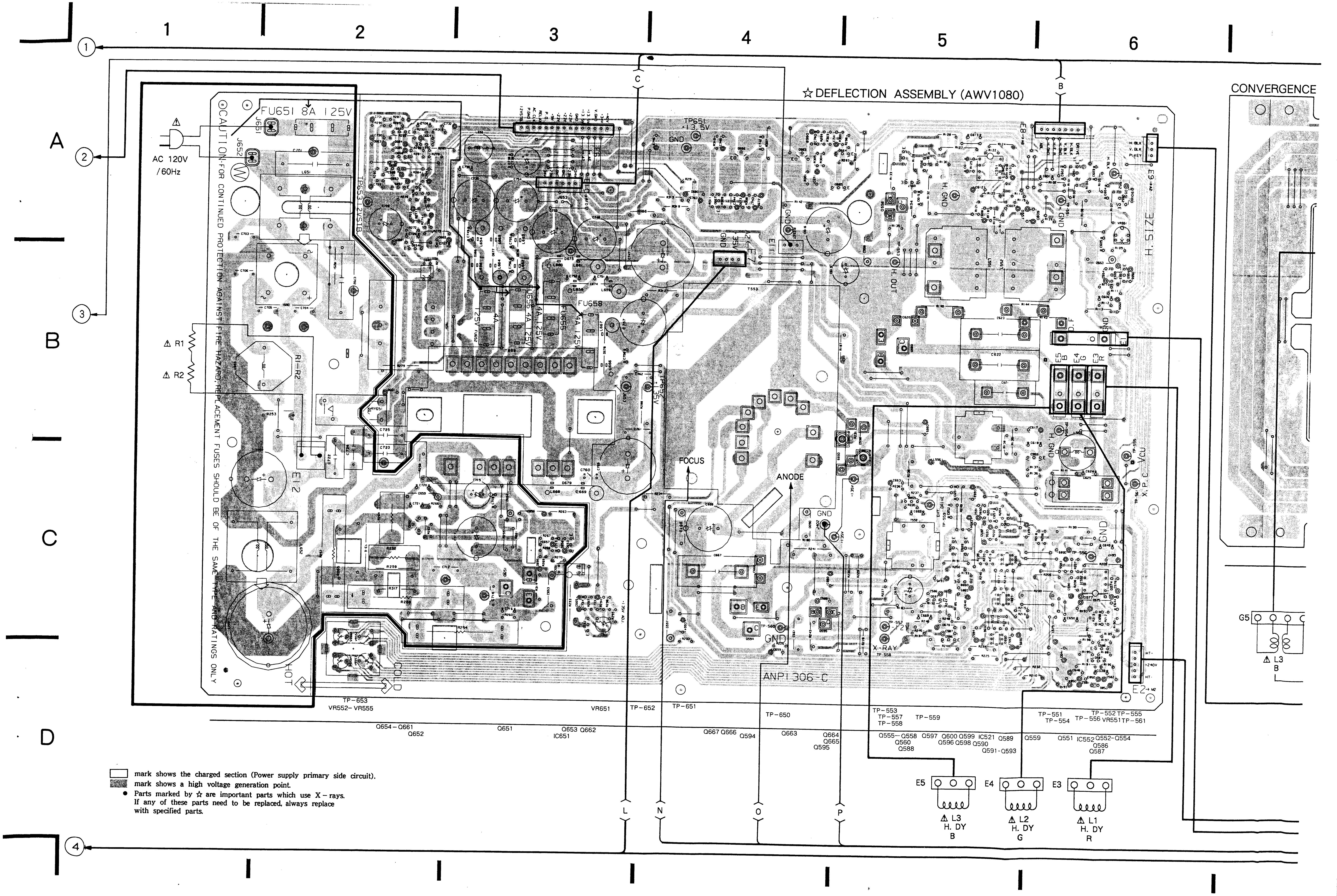
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
E Q504		Transistor
Q215		Radiator type transistor
D203		Diode
R237		Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

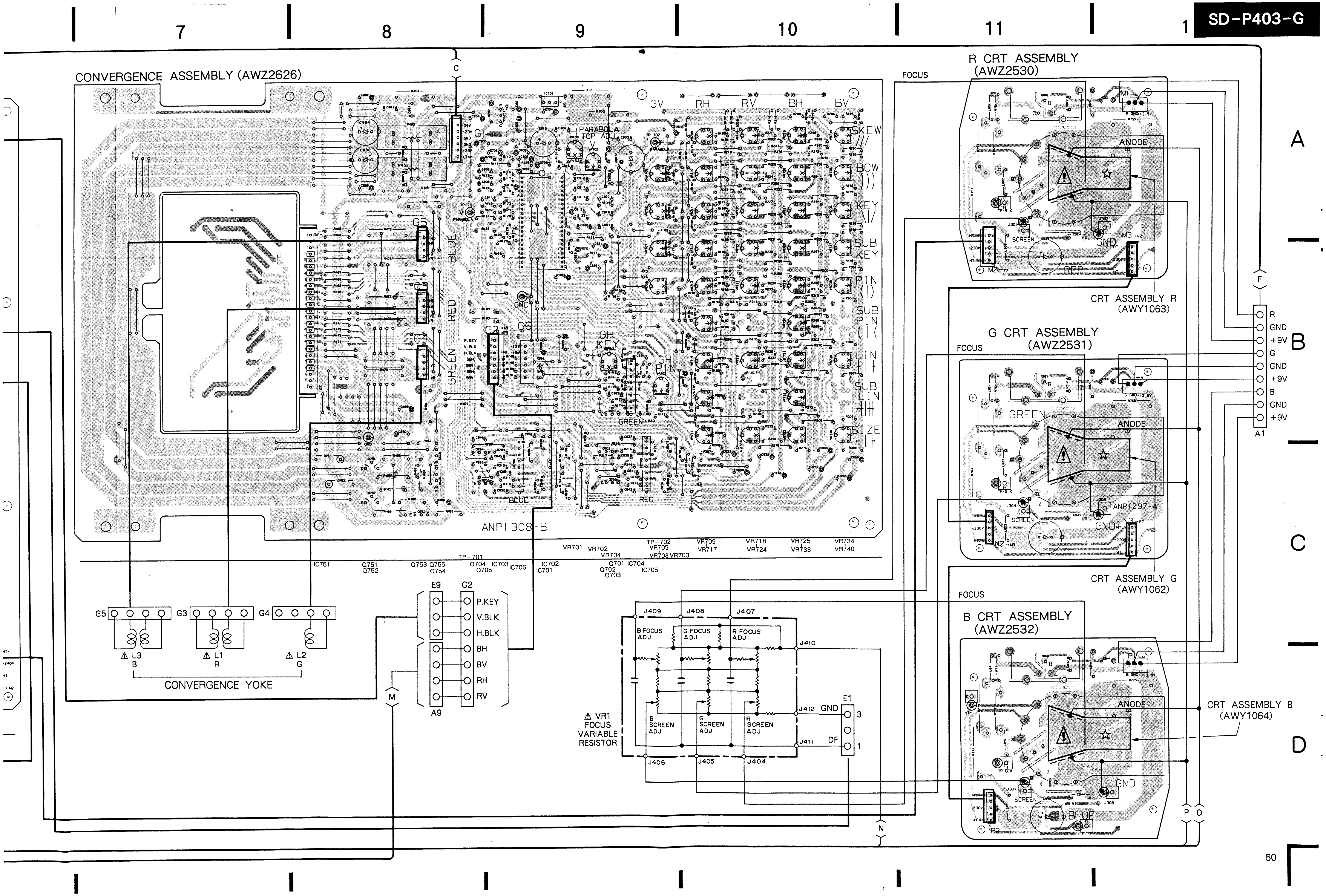
3. The capacitor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

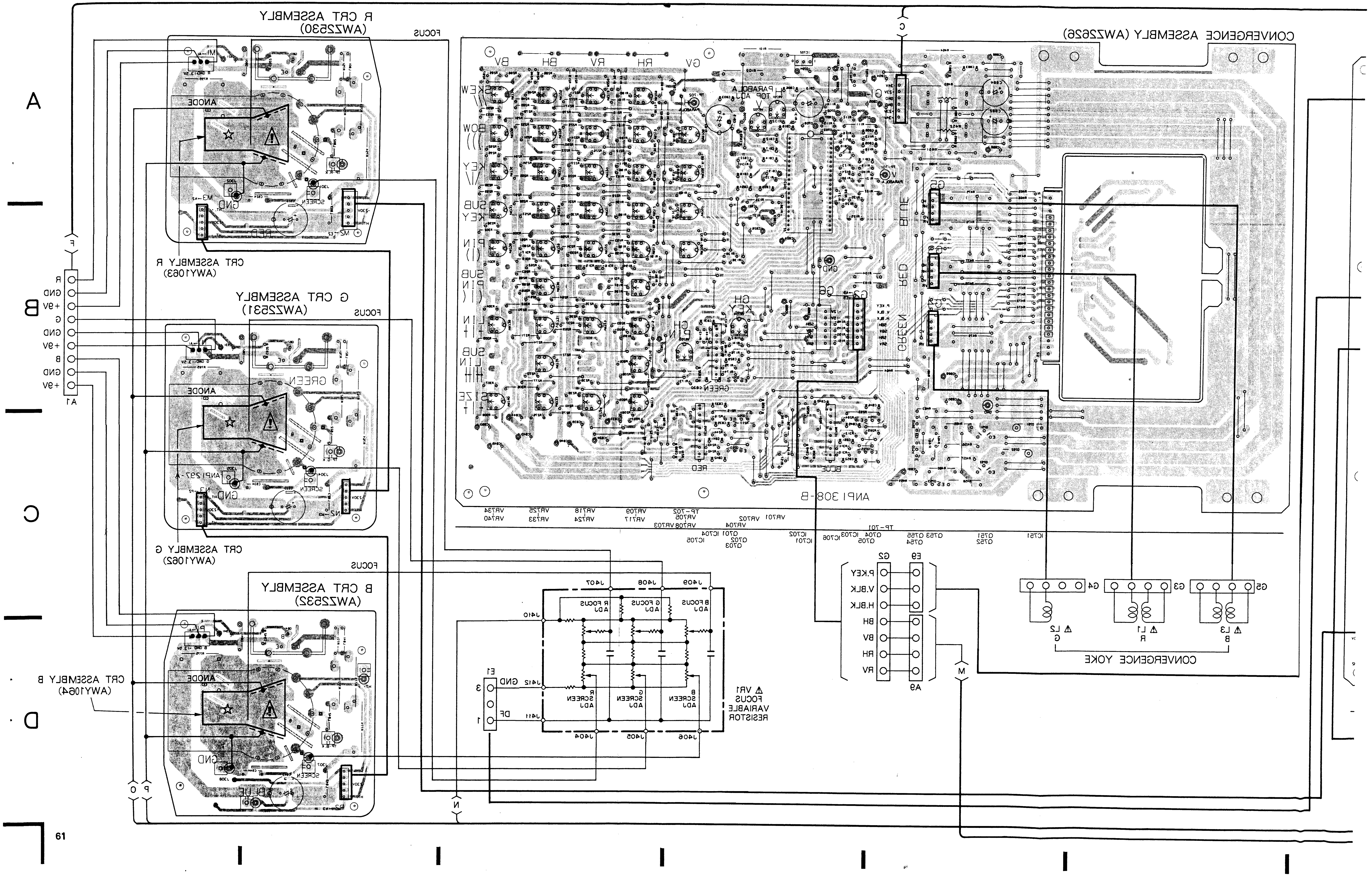

1
2
3
4
5
6
A
B
C
D
①
②
③
④
☆DEFLECTION ASSEMBLY (AWV1080)
CONVERGENCE
FU651 8A 125V
J651
J652
AC 120V
/60Hz
⊙CAUTION-FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
⚠ R1
⚠ R2
R1-R2
E12
HOT
TP653 12V SIB
TP651 13.5V
GND
J656 4A 125V
FU655 4A 125V
FU658
4A 125V
J657 +35V
E11
E7
35V
H.OUT
H.GND
H.SIZE
E8
E9
E5
E4
E3
D.F
FOCUS
ANODE
X-RAY
X.P.C Vcu
12V
E2
ANP1306-C
TP-653
VR552-VR555
VR651
TP-652
TP-651
TP-650
TP-553
TP-557
TP-558
TP-559
TP-551
TP-554
TP-552
TP-556
VR551
TP-555
TP-561
Q654-Q661
Q652
Q651
Q653
Q662
IC651
Q667
Q666
Q594
Q663
Q664
Q665
Q595
Q555-Q558
Q560
Q588
Q597
Q600
Q599
Q596
Q598
IC521
Q590
Q589
Q591-Q593
Q559
Q551
IC552
Q552-Q554
Q586
Q587
C
B
L
N
O
P
G5
⚠ L3
B
E5
E4
E3
⚠ L3
H. DY
B
⚠ L2
H. DY
G
⚠ L1
H. DY
R

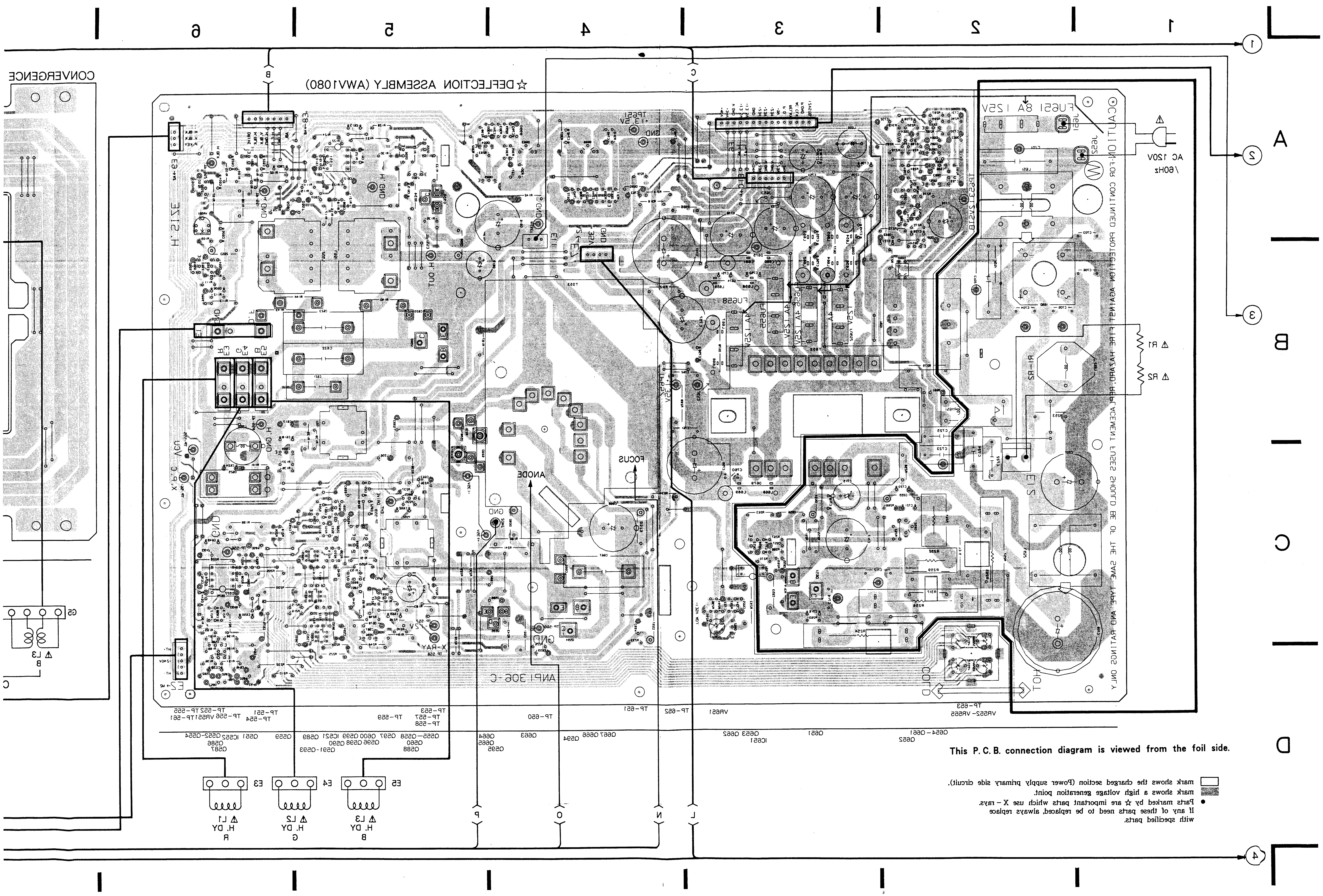
▭ mark shows the charged section (Power supply primary side circuit).

▨ mark shows a high voltage generation point.

- Parts marked by ☆ are important parts which use X - rays.
  If any of these parts need to be replaced, always replace
  with specified parts.


7
8
9
10
11
1
A
B
C
D
CONVERGENCE ASSEMBLY (AWZ2626)
C
G5
G4
G3
G6
G2
G1
BLUE
RED
GREEN
PARABOLA TOP ADJ V
TP-701 V PARABOLA
TP-702 H PARABOLA
GND
GV
RH
RV
BH
BV
SKEW
BOW
KEY
SUB KEY
PIN
SUB PIN
LIN
SUB LIN
SIZE
GH KEY
GH PIN
P.KEY
V.BLK
H.BLK
SBH
SBV
SRH
SRV
ANP1308-B
VR701 VR702 VR704
TP-702 VR705 VR708 VR703
VR709 VR717
VR718 VR724
VR725 VR733
VR734 VR740
TP-701
IC751
Q751 Q752
Q753 Q755 Q754
Q704 Q705
IC703
IC706
IC702 IC701
Q701 IC704 Q702 Q703
IC705
G5
G3
G4
⚠ L3 B
⚠ L1 R
⚠ L2 G
CONVERGENCE YOKE
E9
G2
P.KEY
V.BLK
H.BLK
BH
BV
RH
RV
A9
M
FOCUS
R CRT ASSEMBLY (AWZ2530)
ANODE
SCREEN
GND
J301
J302
M1
M2
M3
RED
CRT ASSEMBLY R (AWY1063)
F
R
GND
+9V
G
GND
+9V
B
GND
+9V
A1
G CRT ASSEMBLY (AWZ2531)
FOCUS
GREEN
ANODE
ANP1297-A
J304
J305
SCREEN
GND
N1
N2
N3
CRT ASSEMBLY G (AWY1062)
FOCUS
B CRT ASSEMBLY (AWZ2532)
ANODE
SCREEN
GND
J307
J308
BLUE
P1
P2
P3
CRT ASSEMBLY B (AWY1064)
J409
J408
J407
B FOCUS ADJ
G FOCUS ADJ
R FOCUS ADJ
J410
B SCREEN ADJ
G SCREEN ADJ
R SCREEN ADJ
J412
GND
J411
DF
E1
3
1
J406
J405
J404
⚠ VR1 FOCUS VARIABLE RESISTOR
N
P
O


1
11
10
9
8
7
A
B
C
D
R CRT ASSEMBLY
(AWZ2530)
G CRT ASSEMBLY
(AWZ2531)
B CRT ASSEMBLY
(AWZ2532)
CRT ASSEMBLY R
(AWY1063)
CRT ASSEMBLY G
(AWY1062)
CRT ASSEMBLY B
(AWY1064)
CONVERGENCE ASSEMBLY (AWZ2626)
FOCUS
ANODE
SCREEN
GND
RED
GREEN
BLUE
ANP1308-B
ANP1297-A
R
GND
+9V
G
GND
+9V
B
GND
+9V
A1
F
C
O
P
N
M
GV
RH
RV
BH
BV
SKEW
BOW
KEY
SUB KEY
PIN
SUB PIN
LIN
SUB LIN
SIZE
PARABOLA
TOP ADJ
GH KEY
GH PIN
G5
G6
G7
J407
J408
J409
J410
J411
J412
J404
J405
J406
R FOCUS ADJ
G FOCUS ADJ
B FOCUS ADJ
R SCREEN ADJ
G SCREEN ADJ
B SCREEN ADJ
⚠ VR1
FOCUS
VARIABLE
RESISTOR
E1
GND
DF
3
1
E9
G2
A9
P.KEY
V.BLK
H.BLK
BH
BV
RH
RV
G4
G3
G5
⚠ L2
G
⚠ L1
R
⚠ L3
B
CONVERGENCE YOKE
VR734 VR740
VR725 VR733
VR718 VR724
VR709 VR717
VR711
TP-702 VR705 VR708 VR703
VR704
VR702
VR701
IC701 IC702
IC706
IC703 Q704 Q705
Q755 Q753 Q754
Q751 Q752
IC751
TP-701
Q701 IC704 Q702 Q703
IC705


6
5
4
3
2
1
A
B
C
D
①
②
③
④
☆DEFLECTION ASSEMBLY (AWV1080)
CONVERGENCE
ANP1306-C
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
FU651 8A 125V
AC 120V /60Hz
⚠ R1
⚠ R2
FOCUS
ANODE
GND
H.OUT
X-RAY
E3
E4
E5
⚠ L1 H. DY R
⚠ L2 H. DY G
⚠ L3 H. DY B
G5
⚠ L3 B
B
C
L
N
O
P

This P.C.B. connection diagram is viewed from the foil side.

☐ mark shows the charged section (Power supply primary side circuit).

▨ mark shows a high voltage generation point.

- Parts marked by ☆ are important parts which use X-rays. If any of these parts need to be replaced, always replace with specified parts.

9. ADJUSTMENT

- Adjustment items are described as follows.

9.1 When TUNER assembly is repaired.
9.2 When TUNER assembly is replaced.
9.3 When VIDEO assembly is repaired.
  9.3.1 Video section.
  9.3.2 Microcomputer section.
9.4 When VIDEO assembly is replaced.
  9.4.1 Video section.
  9.4.2 Microcomputer section.
9.5 When DEFLECTION assembly is repaired.
  9.5.1 Power supply section.
  9.5.2 Deflection section.
9.6 When DEFLECTION assembly is replaced.
  9.6.1 Power supply section
  9.6.2 Deflection section.
9.7 When CONVERGENCE assembly is repaired or replaced.
9.8 When FRONT CONTROL assembly is repaired.
9.9 When FRONT CONTROL assembly is replaced.
9.10 When R, G or B CRT assembly is repaired or replaced.
9.11 When CRT assembly R, G or B is replaced.
9.12 When lens assembly is replaced.
9.13 When other assemblies are repaired or replaced.
9.14 DPO level setting.
9.15 DPO sensitivity adjustment.
9.16 Anode cable connection and disconnection.

- These adjustment procedures are described separately for adjustments following assembly exchange and adjustments following repairs.
- When replacing the assemblies, always use recommended replacements.
- Symbols in parentheses next to the adjustment position ( ) indicate denotes the relevant assembly to be adjusted.

V : VIDEO assembly
C : CONVERGENCE assembly
F : FRONT CONTROL assembly
D : DEFLECTION assembly
T : TUNER assembly
VR : Focus variable resistor (VR1)

- The adjustment points and TP terminals on the each assemblies are shown in Fig. 9-6 thru 9-9.

Fig. 9-6 : VIDEO assembly, TUNER assembly, rear panel and DEFLECTION assembly.
Fig. 9-7 : Front panel, FRONT CONTROL assembly, CONVERGENCE assembly and focus variable resistor.
Fig. 9-8 : B CRT assembly, G CRT assembly and deflection yoke.
Fig. 9-9 : Lens assembly (Red, Green, Blue).

- Set the input terminals at the rear panel as follows unless otherwise noted.

VIDEO signal : INPUT VDP VIDEO terminal
AUDIO signal : INPUT VDP AUDIO terminal

- Set the picture quality to standard (screen displayed "STD") by remote control unit unless otherwise noted.

9.1 WHEN TUNER ASSEMBLY IS REPAIRED

- Connection diagram is refered to Fig. 9-1.
- Adjustment points and test points (TP) are shown in Fig. 9-6-1.
- Perform the adjustment set to the TEST mode (Note 1).
- Perform the adjustment by using the channel 9 unless otherwise noted.
- Video and audio input signals are described in the below.

Video signal

V① ; fv = EIA color bar, 60dBμV

Ⓝ ; No signal (No carrier)

Audio signal (MONO)

S① ; f_A = 1kHz, 100% MOD, 54dBμV

Audio signal (STEREO) ; dbx noise reduction ON, PRE-EMPHASIS ON

S② ; f_A = 300Hz, 30% MOD, Lch (or Rch) only, 54dBμV

S③ ; f_A = 5kHz, 30% MOD, Lch (or Rch) only, 54dBμV

Signal for trap adjustment

T① ; 53.75MHz, unmodulated, 54dBμV

T② ; 59.75MHz, unmodulated, 54dBμV

Note 1 ;

How to set the TEST mode.

- Short-circuit PLL TEST TP and GND in the VIDEO assembly. (Fig. 9-6-2)
- Disconnect the AC power cord from the AC outlet, then connect it again.

How to release the TEST mode.

- Release the short-circuit PLL TEST TP and GND in the VIDEO assembly.
- Disconnect the AC power cord from the AC outlet, then connect it again.

Video System

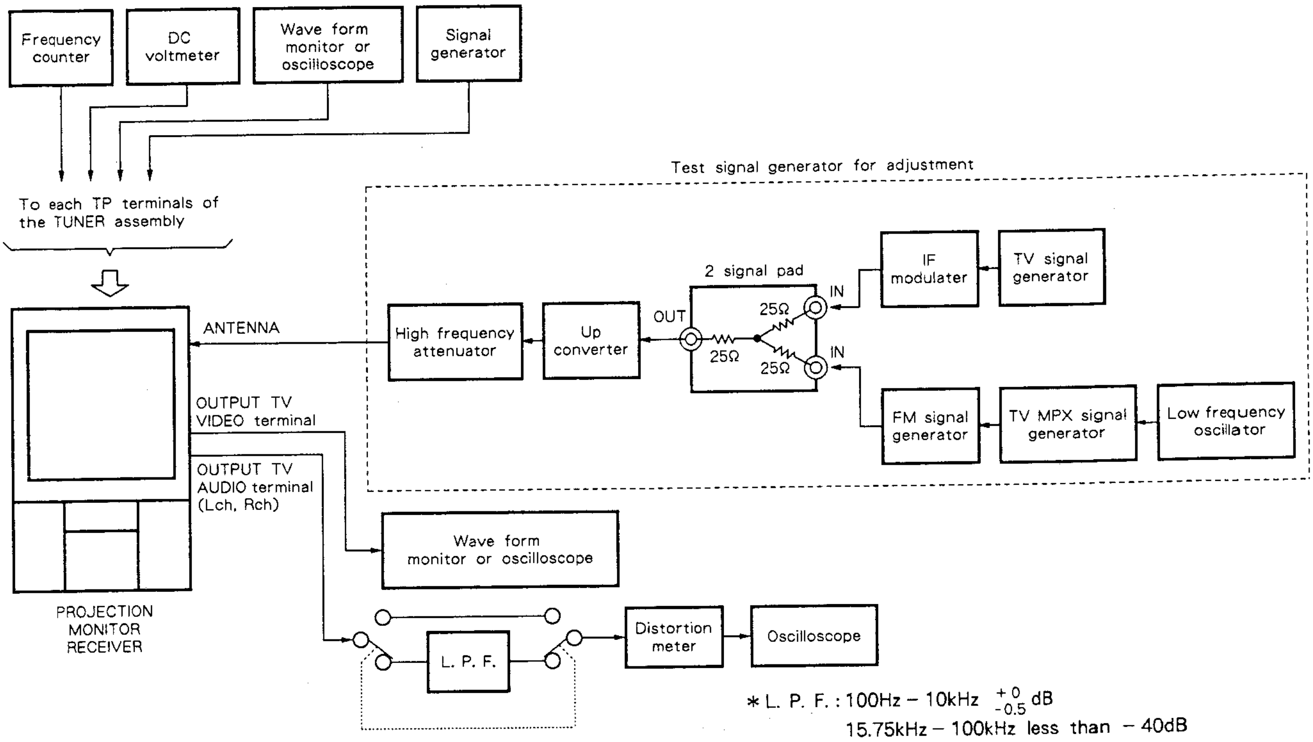
Step No.	Adjustment item	Input signal		Adjustment point	Adjustment procedure
		Video	Audio		
1	Adjacent audio trap	2 ch Ⓝ	T①	L302 (T)	Adjust TP-2 47.25MHz component to minimum level.
2	Audio trap	2 ch Ⓝ	T②	L303 (T)	Adjust TP-2 41.25MHz component to minimum level.
3	Synchronous detection	V①	S①	–	Short TP-4 to GND, and measure TP-7 voltage.
4				L310 (T)	Open TP-4, and adjust the TP-7 voltage to the voltage measured in step 3.
5	RF AGC			VR302 (T)	Adjust the TP-1 voltage to 6.5V.
6	AFT			L309 (T)	Adjust the TP-5 voltage to 4.5V.
7	VIDEO output			VR301 (T)	Adjust the output level of the OUTPUT REC (EXCEPT VIDEO 1) terminal on the rear panel to 1Vp-p when that terminal is terminated by 75 ohms.

Audio System

Step No.	Adjustment item	Input signal		Adjustment point	Adjustment procedure
		Video	Audio		
1	Audio detection	V①	S①	L312 (T)	Adjust the distortion of the AUDIO OUTPUT terminal on the rear panel to minimum level.
2	dbx filter	Ⓝ	Ⓝ	VR303 (T)	Input the signal of 22.9kHz/245mV to TP-10, and adjust TP-11 output to minimum.
3	VCO	Ⓝ	Ⓝ	—	Measure the DC voltage of TP-8 with no input signal.
4		Ⓝ	Ⓝ	VR304 (T)	Input the signal of 15.734kHz/48mV to TP-10, and adjust the DC voltage of TP-8 to the voltage measured in step 3.
5	Separation	V①	S②	VR305 (T)	Adjust the output of the AUDIO OUTPUT terminal on the rear panel to minimum level.
6			S③	VR306 (T)	
7	Repeat steps 5 and 6 to obtained best separation.				

9.2 WHEN TUNER ASSEMBLY IS REPLACED

- No adjustment required.


Frequency counter
DC voltmeter
Wave form monitor or oscilloscope
Signal generator
To each TP terminals of the TUNER assembly
ANTENNA
OUTPUT TV VIDEO terminal
OUTPUT TV AUDIO terminal (Lch, Rch)
PROJECTION MONITOR RECEIVER
Test signal generator for adjustment
High frequency attenuator
Up converter
OUT
2 signal pad
25Ω
25Ω
25Ω
IN
IN
IF modulater
TV signal generator
FM signal generator
TV MPX signal generator
Low frequency oscillator
Wave form monitor or oscilloscope
L. P. F.
Distortion meter
Oscilloscope

∗ L. P. F. : 100Hz – 10kHz $^{+0}_{-0.5}$ dB
15.75kHz – 100kHz less than –40dB

Fig. 9-1 Connection diagram when adjusting the tuner section

9.3 WHEN VIDEO ASSEMBLY IS REPAIRED

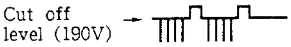
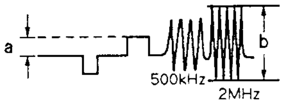
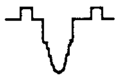
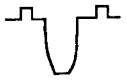
9.3.1 Video section

- Adjustment test points (TP) are located in the VIDEO assembly unless otherwise noted (Refer to Fig. 9-6-2).

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	Comb filter adjustment	Color bar	VR101, L150 (V)	Adjust TP-01 3.58MHz component to minimum level.
2	White balance adjustment	Color bar signal without color signal	Screen VR (R),(B) (VR1)	Adjust the screen VRs (R) and (B) until grey color can just be seen in the color of dark area. (Do not move the green VR at this stage.)
			VR102 (R) VR105 (B) Drive VR (V)	Using the drive VR, adjust the color of bright area to white.

9.3.2 Microcomputer section

- Set to the FACTORY ADJ. MODE. (＊2)
- The ＊1 mark in the adjustment description means that the corresponding adjustment should be effectuated with the remote control unit in the same way as the adjustment by the user.

Step No.	Adjustment item		Input signal	Adjustment point	Adjustment procedure
1	PIONEER Standard setting	Brightness adjustment	–	Color (＊1)	Minimize Color by remote control.
2			Cross hatch signal	Brightness (＊1)	Adjust the cut off level at TP-GK of G. CRT assembly to 190V. (After adjustment, confirm the white balance.)  (After this adjustment, adjust color as described in step No. 4).
3		Sharpness adjustment	Multi burst	Sharpness (＊1)	At TP-05, set the rate of b (peak-to-peak value at 2MHz) to a (level from black to white) as follows. a : b = 3 : 9.5 (+ 10dB) 
4		Color adjustment	Color bar	Color (＊1)	Adjust screen to optimum condition.
5		Tint adjustment		Tint (＊1)	Adjust screen to optimum condition.
6		Contrast adjustment		Contrast (＊1)	Adjust screen to optimum condition.
7			Free signal	—	At the TP-BK of B. CRT assembly, confirm that the signal is shaped as shown below.  Shapely wave form  Shapeless wave form
8	Turn the FACTORY ADJ. MODE switch (S863) off to the normal mode. (＊2)				
9	Blue tailing adjustment		Cross signal	—	Adjust the SG output of the input cross signal to maximum level.
					Maximize contrast by remote control.
				VR107 (V)	Turn VR107 fully counter clockwise (resulting in blue tailing.).
					Turn the VR clockwise until there is no blue tailing at the vertical cross line on the screen.
10	Press the FACTORY ADJ. MODE ON/OFF switch (S863) twice so that the test cross signal is reset to the default status. Pressing the switch twice will enter the FACTORY ADJ. MODE, and then the normal mode.				
11	Test cross H. center position		Signal with synchronizing signal meaning	TC201 (V)	Generate test cross signal, and adjust to center of screen.
12	DPO level adjustment		This adjustment only needs to be carried out if IC205 (M6M80011AP) is replaced or if the DPO preset level is changed when a peripheral circuit is repaired. The adjustment procedure is described in Section 9.14.		

＊1 : Adjust by remote control.
＊2 : FACTORY ADJ. MODE ON/OFF
Press the FACTORY ADJ. MODE ON/OFF switch (S863) with a thin stick or a similar object through the center hole of the front panel. Press the switch once again, and the normal mode will be re-entered. (Refer to Fig. 9-7)

9.4 WHEN VIDEO ASSEMBLY IS REPLACED

9.4.1 Video section

- Adjust white balance adjustment as described in section 9.3.1.

9.4.2 Microcomputer section

- Peform PIONEER standard setting and blue tailing adjustment as described in section 9.3.2.

9.5 WHEN DEFLECTION ASSEMBLY IS REPAIRED

Note : VR552 thru VR555 are protected by the shield covers (ANH1213) so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

9.5.1 Power supply section

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	135V power supply adjustment	Monoscope signal	VR651 (D)	Adjust TP652 voltage to 135V ± 1V.

9.5.2 Deflection section

- Adjustment test points (TP) are located in the DEFLECTION assembly.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	Focus adjustment	Cross hatch signal	Focus VR (VR)	Optimize the focus of each CRT assembly. (Focus is easier to judge if red and blue are displaced by turning the convergence controls on the remote control as shown in Fig. 9-7. Readjust these controls to their original positions after completing the focus adjustment.)
2	Vertical size adjustment	Monoscope signal or ordinary broadcasting	VR601 (V)	Adjust to 92%±2% when using the monoscope signal, and adjust so that the screen picture does not lack any part of the entire picture field when using the ordinary broadcasting.
3	Horizontal size adjustment		VR551 (D)	
4	White balance adjustment	Ordinary broadcasting	Screen (VR1) (R) (G) (B)	Adjust the white if proper adjustment cannot be achieved as follows. Set the COLOR by the remote control to minimum, adjust the screen VRs to obtained best picture.

9.6 WHEN DEFLECTION ASSEMBLY IS REPLACED

Note : As VR552 thru VR555 in the DEFLECTION assembly supplied as a spare part are not protected by the shield cover (ANH1213), do the followings :

1. When ordering the DEFLECTION assembly, also order the shield cover.
2. Cover VR552 thru VR555 of the DEFLECTION assembly with the shield cover and solder the top position as shown below.(Never turn VR552 thru VR555.)

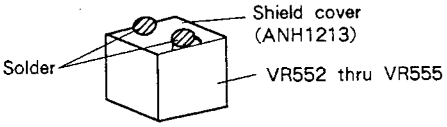


Fig. 9-2 Shield cover

9.6.1 Power supply section

- No adjustment required.

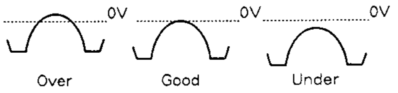
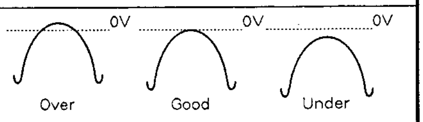
9.6.2 Deflection section

- Adjust focus, vertical size, horizontal size and white balance as described in section 9.5.2.

9.7 WHEN CONVERGENCE ASSEMBLY IS REPAIRED OR REPLACED

- Adjust convergence as described in section "9.7.2 CONVERGENCEE ADJUSTMENT".
- Press the FACTORY ADJ. MODE ON/OFF switch (S863) twice before adjustment. Pressing the switch twice will enter the FACTORY ADJ. MODE, and then the normal mode.

9.7.1 PARABOLA WAVEFORM TOP LEVEL ADJUSTMENT

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	TOP LEVEL OF H PARABOLA WAVEFORM	VR701	At TP702, set the top level of output waveform to 0V ± 20mV. 
2	TOP LEVEL OF V PARABOLA WAVEFORM	VR702	At TP701, set the top level of output waveform to 0V ± 20mV. 

9.7.2 CONVERGENCE ADJUSTMENT

- Picture movement and adjustment points are summarized in Fig. 9-3 and 9-4.
- Adjustment points are located in the CONVERGENCE assembly except POSITION control. Also adjust the POSITION by remote control.
- Input signal is the cross-hatch signal.
- Convergence adjustment outline is referred to the Service manual SD-P401/KUX1C (ARP1455), and SD-P40/KU (ARP-977-0), except for H-S-PIN and H-S-LIN adjustments.
- After performed all adjustment, release the short-circuit to obtained white screen and perform the pre-adjustment.
- Correct the vertical line by horizontal correcting signal and correct the horizontal line by vertical correcting signal.

(1) GREEN LINE ADJUSTMENT

- Since the green lines are used as a reference when adjusting red and blue, make sure it is adjusted accurately.
- Short-circuit TP-47R, TP-47B and +12V TP in the VIDEO assembly, then green lines appear in the screen. Release the short-circuit after green line adjustment.

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	GH - PIN	VR703	Adjust the green line to a straight line (refer to Fig. 9-3 and 9-4).
2	GH - KEY	VR704	
3	GV - BOW	VR705	
4	GV - KEY	VR706	
5	GV - S - KEY	VR707	
6	GV - PIN	VR708	
7	Repeat steps 1 thru 6 until the best possible picture is obtained.		

Note : ∗1
POSITION adjustment is possible when PRESET MENU switches (S875, S870) are pushed, and CONVERGENCE mode of MENU is set.
Since CROSS TEST signal is displayed forcibly in the case of CONVERGENCE mode, adjust with this signal. (Refer to page 16 of Operating Instructions with this Service Manual.) After finishing the POSITION adjustment, set the MENU switch to off.

(2) RED LINE ADJUSTMENT

- Short-circuit TP-47B and + 12V TP, then green lines and red lines appear in the screen. Release the short-circuit after red line adjustment.
- Adjust each VR so that the red lines converge with the green lines to obtain yellow lines.
- After adjustmet., perform fine-adjustment by observing the overall screen.

● Red horizontal distortion compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	RH-SKEW	VR709	Adjust the red vertical lines in the center of the screen to straight lines without distortion and lean. (Refer to Fig. 9-3.)
2	RH-BOW	VR710	
3	Repeat steps 1 and 2.		
4	RH-KEY	VR711	Adjust the red vertical lines in the right and left section of the screen to straight lines without lean. (Refer to Fig. 9-3.)
5	RH-S-KEY	VR712	
6	Repeat steps 4 and 5.		
7	RH-PIN	VR713	Adjust the red vertical lines in the right and left sections of the screen to straight lines without distortion. (Refer to Fig. 9-3.)
8	RH-S-PIN	VR714	
9	Repeat steps 7 and 8 or steps 1 thru 8.		

● Red horizontal interval compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	RH-POSITION	*1 Keys 4, 5 and 6 of remote control	Adjust so that the red vertical lines converge with the green vertical lines in the center of the screen to obtain yellow lines. (This serves as the reference setting, but if the lines diverge during the adjustment, proceed with the adjustment after considering this divergence.)
2	RH-LIN	VR715	Adjust so that the red vertical lines converge with the green vertical lines in the right and left sections of the screen to obtain yellow lines. (Refer to Fig. 9-3)
3	RH-S-LIN	VR716	
4	RH-SIZE	VR717	
5	Repeat steps 1 thru 4.		

● Red vertical distortion compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	RV-SKEW	VR718	Adjust the red horizontal lines in the center of the screen to straight lines without distortion and lean. (Refer to Fig. 9-4.)
2	RV-BOW	VR719	
3	Repeat steps 1 and 2.		
4	RV-KEY	VR720	Adjust the red horizontal lines in the lower and upper sections of the screen to straight lines without lean. (Refer to Fig. 9-4.)
5	RV-S-KEY	VR721	
6	RV-PIN	VR722	
7	Repeat steps 4 thru 6 or steps 1 thru 6.		

● Red vertical interval compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	RV-LIN	VR723	Adjust so that the red horizontal lines converge the green horizontal lines in the center of the screen to obtain yellow lines. (This serves as the reference setting, but if the lines diverge during the adjustment, proceed with the adjustment after considering this divergence.) (Refer to Fig. 9-4.)
2	RV-POSITION	*1 Keys 2, 5 and 8 of remote control	
3	RV - SIZE	VR724	Adjust so that the red horizontal lines converge the green horizontal lines in the lower and upper sections of the screen to obtain yellow lines. (Refer to Fig. 9-4.)
4	Repeat steps 1 thru 3.		

* 1 : See page 70.

(3) BLUE LINE ADJUSTMENT

- Short-circuit TP-47R and +12V TP, then green lines and blue lines appear in the screen. Release the short-circuit after blue line adjustment.
- Adjust each VR so that the blue lines converge with the green lines to obtain cyan lines.
- After adjustment, perform fine-adjustment by observing the overall screen.

● Blue horizontal distortion compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	BH-SKEW	VR725	Observe the blue vertical lines in the screen, and adjust in the same way as the red horizontal distortion compensation adjustment.
2	BH-BOW	VR726	
3	BH-KEY	VR727	
4	BH-S-KEY	VR728	
5	BH-PIN	VR729	
6	BH-S-PIN	VR730	

● Blue horizontal interval compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	B-H-POSITION	*1 Keys 4, 5 and 6 of remote control	Adjust so that the blue lines converge with the green lines to obtain cyan lines in the same way as the red horizontal interval compensation adjustment.
2	BH-LIN	VR731	
3	BH-S-LIN	VR732	
4	BH-SIZE	VR733	

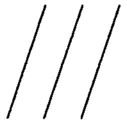
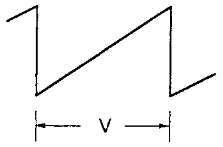
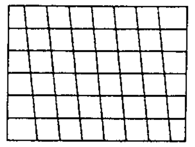
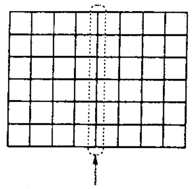
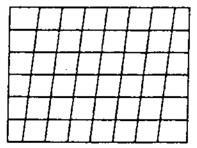
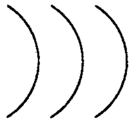
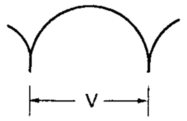
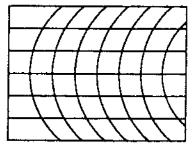
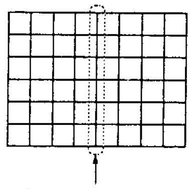
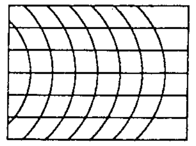
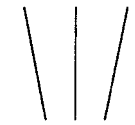
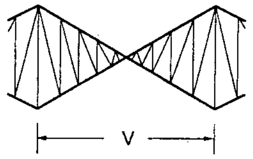
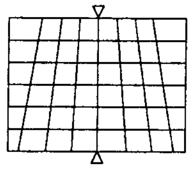
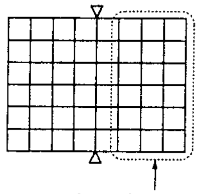
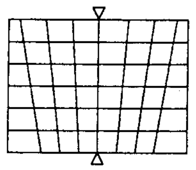
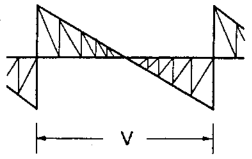
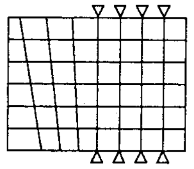
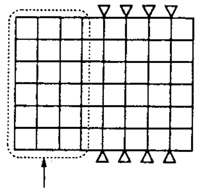
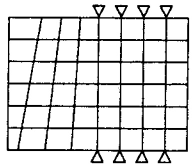
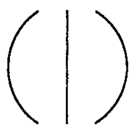
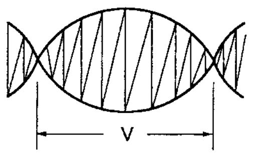
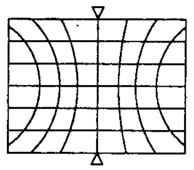
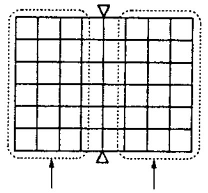
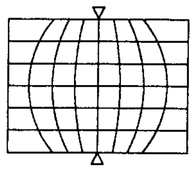
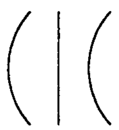
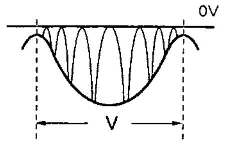
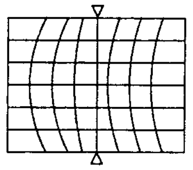
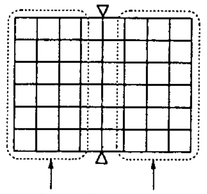
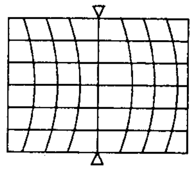
● Blue vertical distortion compensation adjustment

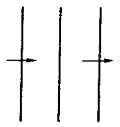
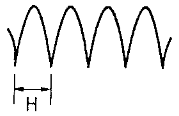
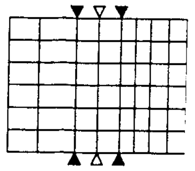
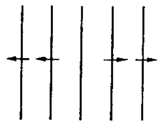
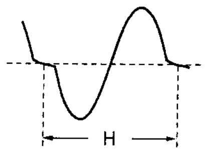
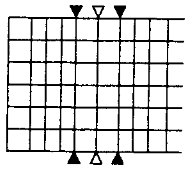
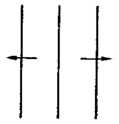
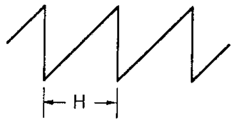
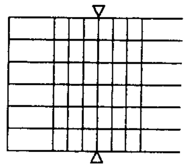
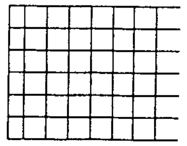
Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	BV-SKEW	VR734	Observe the blue horizontal lines in the screen, and adjust in the same way as the red vertical distortion compensation adjustment.
2	BV-BOW	VR735	
3	BV-KEY	VR736	
4	BV-S-KEY	VR737	
5	BV-PIN	VR738	

● Blue vertical interval compensation adjustment

Step No.	Adjustment item	Adjustment point	Adjustment procedure
1	BV-LIN	VR739	Adjust so that the blue lines converge with the green lines to obtain cyan lines in the same way as the red vertical interval compensation adjustment.
2	BV-POSITION	*1 Keys 2, 5 and 8 of remote control	
3	BV-SIZE	VR740	

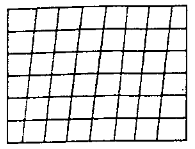
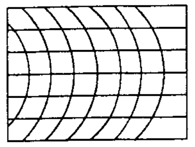
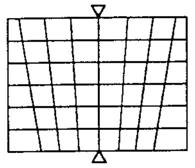
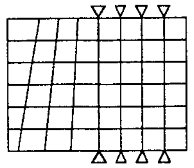
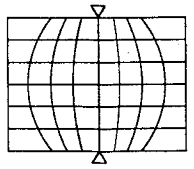
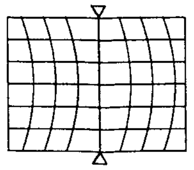
*1 : See page 70.

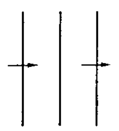
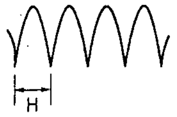
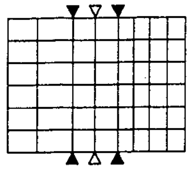
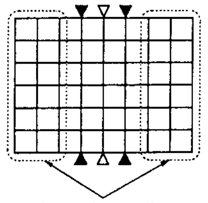
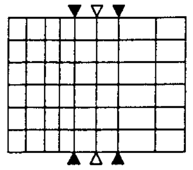
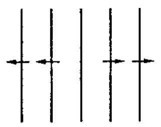
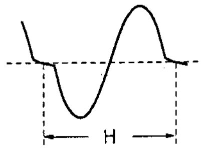
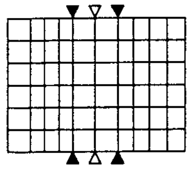
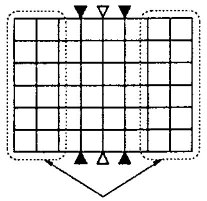
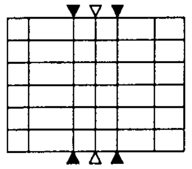
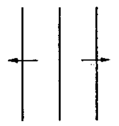
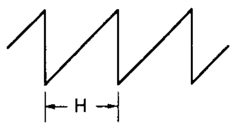
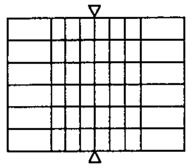
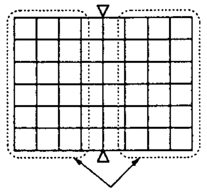
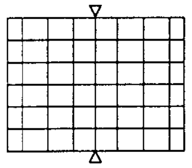
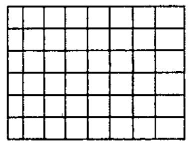
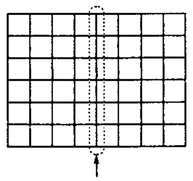
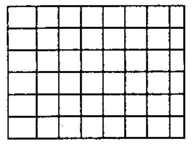
Compensation	Signal and mark *1	Compensating signal	Distorted screen	Corrected screen	Distorted screen	Adjustment point	
Horizontal distortion compensation	H - SKEW 	 V sawtooth wave		⇔  ⇔ Attention point		Observe the vertical lines in the center of the screen (where there is no H-KEY, H-S-KEY, H-PIN nor H-S-PIN movement), then adjust the vertical lines to eliminate lean.	To obtain the best possible lines, adjust the vertical lines in the center of the screen following the adjustment procedure of H-SKEW and H-BOW.
	H - BOW 	 V parabolic wave		⇔  ⇔ Attention point		Observe the vertical lines in the center of the screen, then adjust the bowed lines to straight lines.	
	H - KEY 	 V sawtooth wave × H sawtooth wave		⇔  ⇔ Attention point		Observe the vertical lines in the right section of the screen (where there is no H-S-KEY movement), then adjust the vertical lines to eliminate lean.	To eliminate lean, adjust the vertical lines in the right and left sections of the screen following the adjustment procedure of H-KEY and H-S-KEY.
	H - S - KEY	 V sawtooth wave × 1/2 H sawtooth wave		⇔  ⇔ Attention point		Observe the vertical lines in the left section of the screen, then adjust the vertical lines to eliminate lean.	
	H - PIN 	 V parabolic wave × H sawtooth wave		⇔  ⇔ Attention point		Observe the vertical lines in the right and left sections of the screen, then adjust the bowed lines to symmetrize the right and left by H-S-PIN. And adjust the bowed vertical lines in the right and left sections of the screen to straight lines by H-PIN.	To eliminate distortion, straighten the vertical lines in the right and left sections of the screen following the adjustment procedure of H-PIN and H-S-PIN.
	H - S - PIN 	 V parabolic wave × H parabolic wave		⇔  ⇔ Attention point			

Compensation	Signal and mark *1	Compensating signal	Distorted screen
Horizontal interval compensation	H - LIN 	 H parabolic wave	
	H - S - LIN 	 H sine wave	
	H - SIZE 	 H sawtooth wave	
	H - POSITION	DC voltage	

Note : KEY is short for
and LIN for LINE
▽ : denotes point
▼ : denotes point
*1 : Sketch is printed

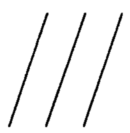
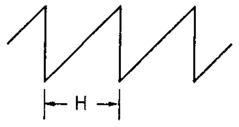
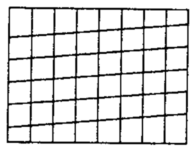
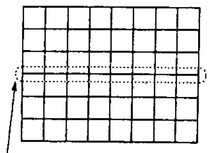
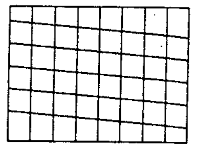
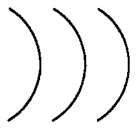
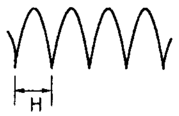
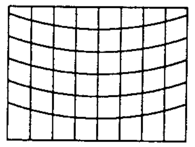
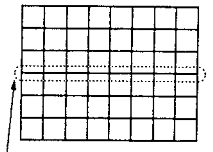
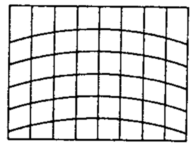
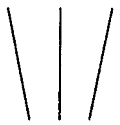
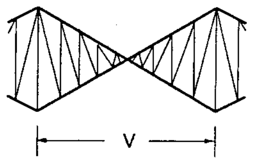
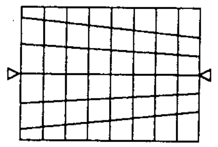
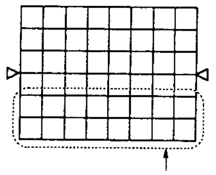
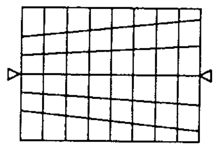
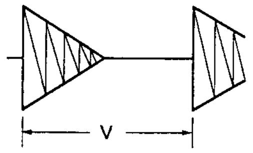
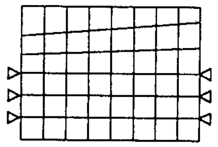
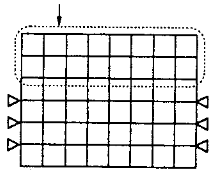
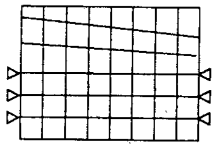
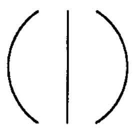
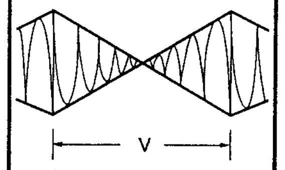
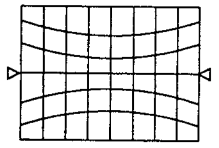
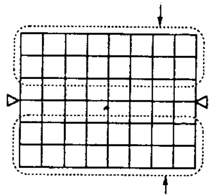
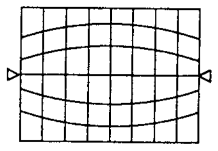
Fig. 9-3 Horizontal compensation

Distorted screen	Adjustment point	
	Observe the vertical lines in the center of the screen (where there is no H-KEY, H-S-KEY, H-PIN nor H-S-PIN movement), then adjust the vertical lines to eliminate lean.	To obtain the best possible lines, adjust the vertical lines in the center of the screen following the adjustment procedure of H-SKEW and H-BOW.
	Observe the vertical lines in the center of the screen, then adjust the bowed lines to straight lines.	
	Observe the vertical lines in the right section of the screen (where there is no H-S-KEY movement), then adjust the vertical lines to eliminate lean.	To eliminate lean, adjust the vertical lines in the right and left sections of the screen following the adjustment procedure of H-KEY and H-S-KEY.
	Observe the vertical lines in the left section of the screen, then adjust the vertical lines to eliminate lean.	
	Observe the vertical lines in the right and left sections of the screen, then adjust the bowed lines to symmetrize the right and left by H-S-PIN. And adjust the bowed vertical lines in the right and left sections of the screen to straight lines by H-PIN.	To eliminate distortion, straighten the vertical lines in the right and left sections of the screen following the adjustment procedure of H-PIN and H-S-PIN.
		

Compensation	Signal and mark *1	Compensating signal	Distorted screen	Corrected screen	Distorted screen	Adjustment point	
Horizontal interval compensation	H-LIN 	 H parabolic wave		 Attention point		Adjust following the adjustment procedure of H-LIN and H-S-LIN (remember the degree of H-SIZE movement) so that the interval between vertical lines on the right section is the same as on the left section, with a central point which does not move. For example, when the vertical lines in the right section of the screen are moved to right direction, move the vertical lines in the left section of the screen as same degree as the gap in the right section to the left direction.	The vertical lines in the center of the screen converge into the green lines by H-POSITION. And also, the vertical lines in the right and left sections of the screen converge into the green lines by H-LIN, H-S-LIN and H-SIZE.
	H-S-LIN 	 H sine wave		 Attention point			
	H-SIZE 	 H sawtooth wave		 Attention point		Converge the vertical lines in the right and left sections of the screen to green lines.	
	H-POSITION	DC voltage		 Center of the screen		The vertical lines of the screen move parallel on the right and left by the convergence control of the remote control. When the vertical line moves at will, consider the degree of movement.	

Note : KEY is short for KEYSTONE, and LIN for LINEARITY
▽ : denotes points which do not move
▼ : denotes points which hardly move
*1 : Sketch is printed on the p.c. board.

Fig. 9-3 Horizontal compensation

Compensation	Signal and mark *1	Compensating signal	Distorted screen	Corrected screen	Distorted screen	Adjustment point	
Vertical distortion compensation	V-SKEW 	 H sawtooth wave		 Attention point		Observe the horizontal lines in the center of the screen (where there is no V-KEY, V-S-KEY nor V-PIN movement), then adjust the horizontal lines to eliminate lean.	To obtain the best possible lines, adjust the horizontal lines in the center of the screen following the adjustment procedure of V-SKEW and V-BOW.
	V-BOW 	 H parabolic wave		 Attention point		Observe the horizontal lines in the center of the screen, then adjust the bowed lines to straight lines.	
	V-KEY 	 V sawtooth wave × H sawtooth wave		 Attention point		Observe the horizontal lines in the lower section of the screen (where there is no V-S-KEY movement), then adjust the horizontal lines to eliminate lean.	To eliminate lean, adjust the horizontal lines in the upper and lower sections of the screen following the adjustment procedure of V-KEY and V-S-KEY.
	V-S-KEY	 1/2 V sawtooth wave × H sawtooth wave		Attention point 		Observe the horizontal lines in the upper section of the screen, then adjust the hori-zontal lines to eliminate lean.	
	V-PIN 	 V sawtooth wave × H parabolic wave		Attention point  Attention point		Observe the horizontal lines in the upper and lower sections of the screen, then adjust the bowed lines to straight lines.	To eliminate distortion, straighten the horizontal lines in the upper and lower sections of the screen following the adjustment procedure of V-PIN.

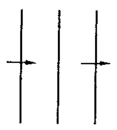
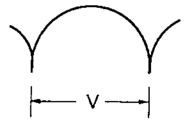
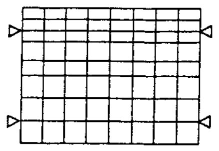
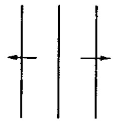
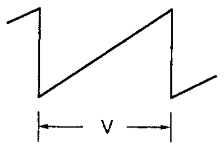
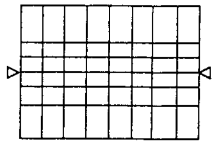
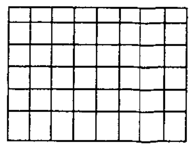
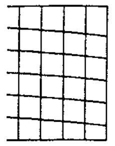
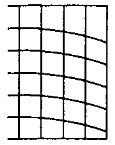
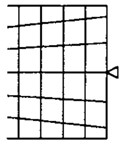
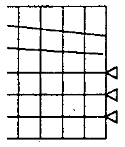
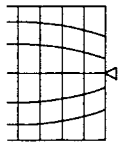
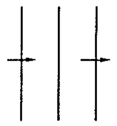
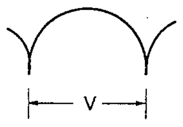
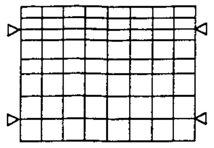
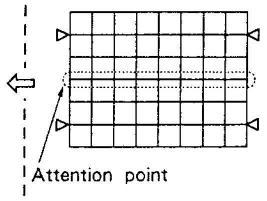
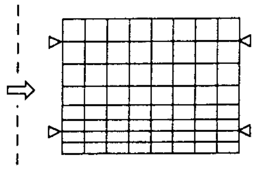
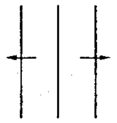
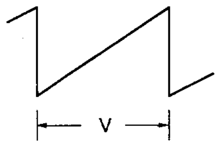
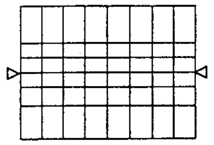
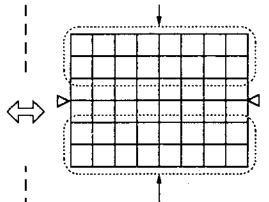
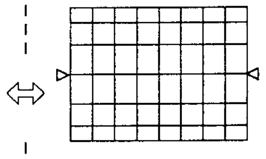
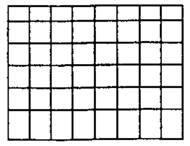
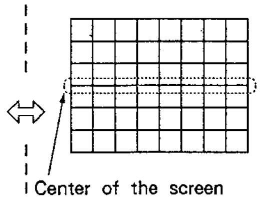
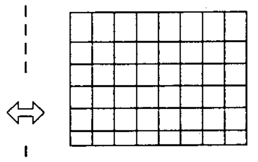
Compensation	Signal and mark *1	Compensating signal	Distorted screen	
Vertical interval compensation	*2 V-LIN 	 V parabolic wave		Atter
	V-S-LIN		No adjustm	
	V-SIZE 	 V sawtooth wave		
	V-POSITION	DC voltage		Cen

Fig. 9-4 Vertical compensation

ed screen	Adjustment point	
	Observe the horizontal lines in the center of the screen (where there is no V-KEY, V-S-KEY nor V-PIN movement), then adjust the horizontal lines to eliminate lean.	To obtain the best possible lines, adjust the horizontal lines in the center of the screen following the adjustment procedure of V-SKEW and V-BOW.
	Observe the horizontal lines in the center of the screen, then adjust the bowed lines to straight lines.	
	Observe the horizontal lines in the lower section of the screen (where there is no V-S-KEY movement), then adjust the horizontal lines to eliminate lean.	To eliminate lean, adjust the horizontal lines in the upper and lower sections of the screen following the adjustment procedure of V-KEY and V-S-KEY.
	Observe the horizontal lines in the upper section of the screen, then adjust the hori-zontal lines to eliminate lean.	
	Observe the horizontal lines in the upper and lower sections of the screen, then adjust the bowed lines to straight lines.	To eliminate distortion, straighten the horizontal lines in the upper and lower sections of the screen following the adjustment procedure of V-PIN.

Compensation	Signal and mark *1	Compensating signal	Distorted screen	Corrected screen	Distorted screen	Adjustment point	
Vertical interval compensation	*2 V-LIN 	 V parabolic wave				Converge the horizontal lines in the center of the screen into green lines. At this time, be sure to the same horizontal line interval as upper section as lower section about a central point. However, if the same interval is not to obtained, adjust POSITION and adjust V-LIN again.	The horizontal lines in the center of the screen converge into the green line by V-LIN and V-POSITION. And also the horizontal lines in the upper and lower sections of the screen converge into the green line by V-SIZE.
	V-S-LIN	No adjustment				—	
	V-SIZE 	 V sawtooth wave				Converge the horizontal lines in the upper and lower sections of the screen into green lines.	
	V-POSITION	DC voltage				The horizontal lines of the screen move parallel on the upper and lower by the convergence control of the remote control. When the horizontal line moves at will, consider the degree of movement.	

Note : KEY is short for KEYSTONE, and LIN for LINEARITY.
▽ : denotes points which do not move.
*1 : Sketch is printed on the P.C. board.
*2 : The movement of V-LIN is the same as the SD-P40/KU.

Fig. 9-4 Vertical compensation

9.8 WHEN FRONT CONTROL ASSEMBLY IS REPAIRED

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	DPO sensitivity adjustment	Adjust DPO sensitivity adjustment as described in section 9.15.		

9.9 WHEN FRONT CONTROL ASSEMBLY IS REPLACED

- No adjustment required.

9.10 WHEN R, G, OR B CRT ASSEMBLY IS REPAIRED OR REPLACED

- White balance should require very little adjustment, but if necessary, adjust as described in Section "9. 5 When DEFLECTION assembly is repaired".

9.11 WHEN CRT ASSEMBLY R, G, OR B IS REPLACED

- The CRT assembly R, G, B replacement procedure is described in Section "10. Replacing the CRT assembly".
- When one or two tubes are replaced, match the new tubes with the remaining tube. If all three tubes are replaced, first adjust G, and then match the other two tubes with the G tube.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	Deflection yoke angle and centering adjustment	Cross signal (or apply any signal, and set PRESET MENU switches S875 and S870 to generate a cross test signal)	Centering magnet of deflection yoke of replaced CRT assembly (Refer to Fig. 9-8)	Adjust the deflection yoke angle until the color cross of the replaced CRT assembly is parallel with the color cross of a CRT assembly which has not been replaced.
				Turn the convergence control to the center position when the red or blue CRT assembly is replaced. Press the FACTORY ADJ MODE ON/OFF switch (S863) twice so that the test cross signal is reset to the default status. Pressing the switch twice will enter the FACTORY ADJ MODE, and then the normal mode.
				Adjust the centering magnet of the deflection yoke in the replaced CRT assembly until cross becomes converge.
2	Focus adjustment	Cross hatch	Replaced color focus VR (VR1) and lens assembly connected to replaced CRT assembly (Refer to Fig. 9-7 and Fig. 9-9)	Adjust the focus of the replaced CRT assembly to optimum condition. (The focus is easier to see if red and blue are displaced by turning the convergence control of remote control at this time. But remember to turn the knob back after completing the adjustment.)
3	Convergence adjustment		Match the color convergence of the replaced CRT assembly with the color an assembly which has not been replaced. See Section 9.7.2 CONVERGENCE ADJUSTMENT for details on the matching procedure. (When CRT assembly G is replaced, match the color convergence of the R, G and B.)	
4	White balance	Color bar signal without color signal	Screen VR (VR1) VR102 (R) } Drive VR VR105 (B) } (V)	Set standard values "0" by remote control unit.
				Adjust the replaced color screen VR until grey can be seen in the color of dark area.
				Adjust the replaced color drive VR until the color of bright area becomes white. (When CRT assembly G is replaced, slightly adjust the drive VR [R] and [B].)
				Adjust the PIONEER Standard brightness only when the above adjustments have not been successfully effectuated due to the abnormal brightness.
5	PIONEER standard settings	Adjust as described in steps 1 thru 7 in Section 9.3.2.		

9.12 WHEN LENS ASSEMBLY IS REPLACED

- Remove the lenticular sheet, and attach tracing paper with a plastic tape, etc. instead. (Refer to Fig. 9-9.) Adjust the focus of the lens assembly newly mounted, by observing the picture shown on the tracing paper.

9.1

- Nc

9.1

The
secti
the
swit
PRO
(con
Alth
conc
beco
envi
qual
(IC2
Henc
repl
qual
Refe
Instı

laced, match the
tube. If all three
, and then match
tube.

e
the color cross of lel with the color not been replaced.
he center position is replaced. Press switch (S863) twice set to the default will enter the normal mode.
deflection yoke in becomes converge.
CRT assembly to r to see if red and vergence control of ember to turn the stment.)
with the color an 2 CONVERGENCE 1 CRT assembly G)
control unit.
until grey can be
until the color of RT assembly G is [R] and [B].)
less only when the essfully effectuated

9.13 WHEN OTHER ASSEMBLIES ARE REPAIRED OR REPLACED

- No adjustment required.

9.14 DPO LEVEL SETTING

The DPO function features a DPO light-sensitive section in the front control panel designed to judge the level of external light when the front panel DPO switch (S872) in ON, thereby matching the PROJECTION MONITOR RECEIVER picture quality (contrast, color, bright) with the external light.

Although picture quality is standard under bright conditions, the quality is changed if the environment becomes dark, and is changed to a fixed level if the environment becomes completely dark. This picture quality level is stored in a non-volatile memory (IC205).

Hence, if IC205 (or peripheral circuits) is repaired or replaced, or if VIDEO assembly is replaced, picture quality must be stored in IC205 again.

Refer to page 23 ("DPO ADJUSTMENT") of Operating Instructions with this Sevice Manual.

The picture quality set in step (2) is thus stored in memory. The default values set prior to shipment from the factory are given below for reference.

Contrast	− 18
Color	− 3
Bright	+ 4

Note : Values subject to possible modification without notice, due to improvements.

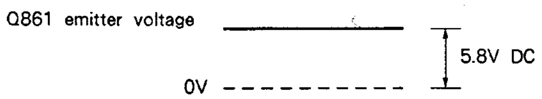
9.15 DPO SENSITIVITY ADJUSTMENT

The sensitivity of the DPO light-sensitive section is adjusted to determine the level of external light at which the DPO feature is activated. This adjustment is made by VR861 in the FRONT CONTROL assembly (refer to Fig. 9-6), and should be carried out according to the customer's preferences. The adjustment procedure used at the factory is given for reference.

(1) Using an incandescent light bulb as the light source, light is beamed directly into the DPO light sensitive section with a light-intensity level of 50 lux at the DPO.

(2) Switch the DPO switch (S872) on. "DPO ON" indicate in the screen.

(3) FRONT CONTROL assembly VR861 is adjusted to obtain a voltage of 5.8V (± 0.1V) at the Q861 emitter.



Note : Values subject to possible modification without notice, due to improvements.

9.16 ANODE CABLE CONNECTION AND DISCONNECTION

SERVICEMAN WARNING

High voltage (31.8kV) will remain at anode of the picture tube for a long period after turning power off even more than one or two weeks.

In this state, it will be really dangerous if any kind of operation which has a risk of electric shock at anode is carried out ; such as replacement of the picture tube (CRT assembly R, G, B) or exchanging and removing an anode cable.

When these kinds of operations are required, be sure to discharge anode voltage following the procedure of "Discharge of anode voltage", page 6.

Disconnect the FBT anode cable as outlined in Fig. 9-5. Confirm the extension of the rubber cover before disconnecting the cable, then it is easy to connect the anode cable after the anode voltage is measured. When connecting the anode cable, proceed in the reverse order as mentioned above. Confirm that the cable will not come off by pulling it after the cable is connected.

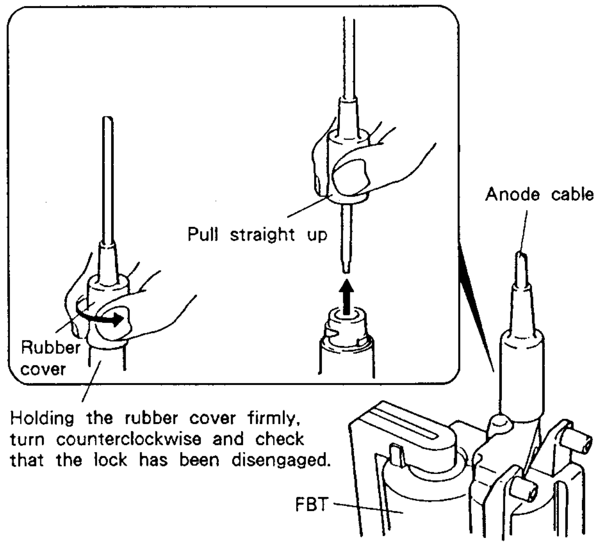

Anode cable
Pull straight up
Rubber cover
Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengaged.
FBT

Fig. 9-5 Disconnecting the anode cable

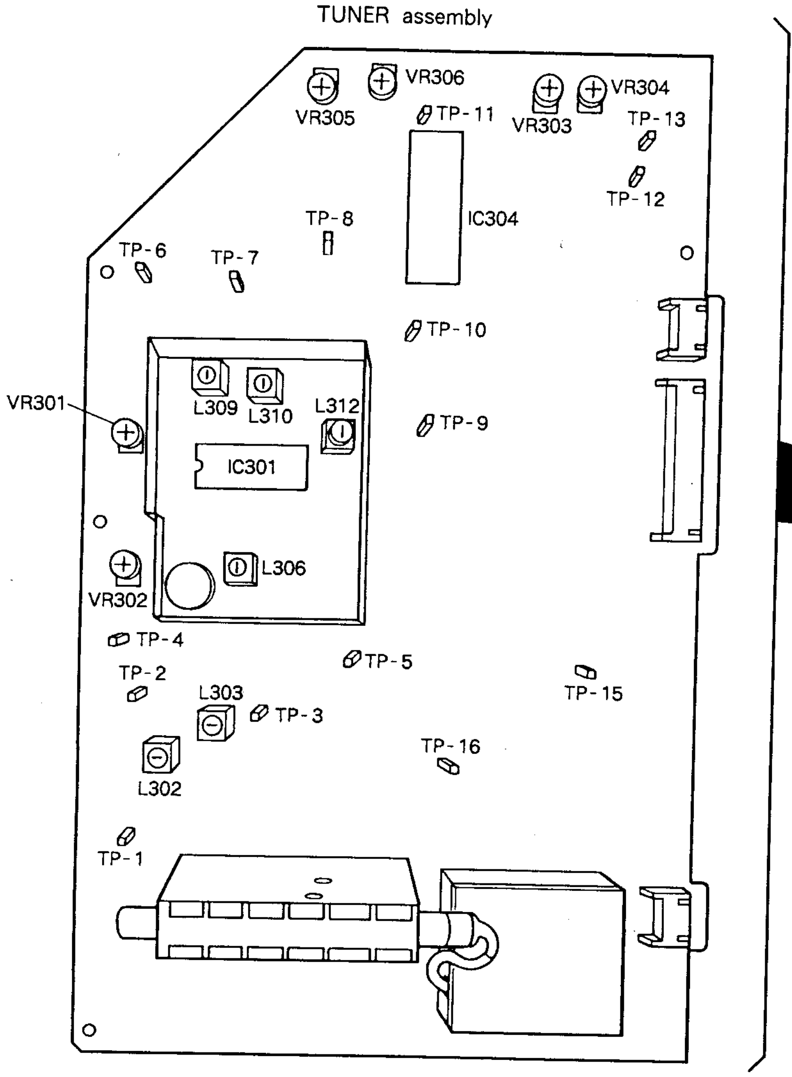

TUNER assembly
VR306
VR305
TP-11
VR304
VR303
TP-13
TP-12
TP-8
IC304
TP-6
TP-7
TP-10
VR301
L309
L310
L312
TP-9
IC301
L306
VR302
TP-4
TP-5
TP-2
L303
TP-3
TP-15
TP-16
L302
TP-1

Fig. 9-6-1

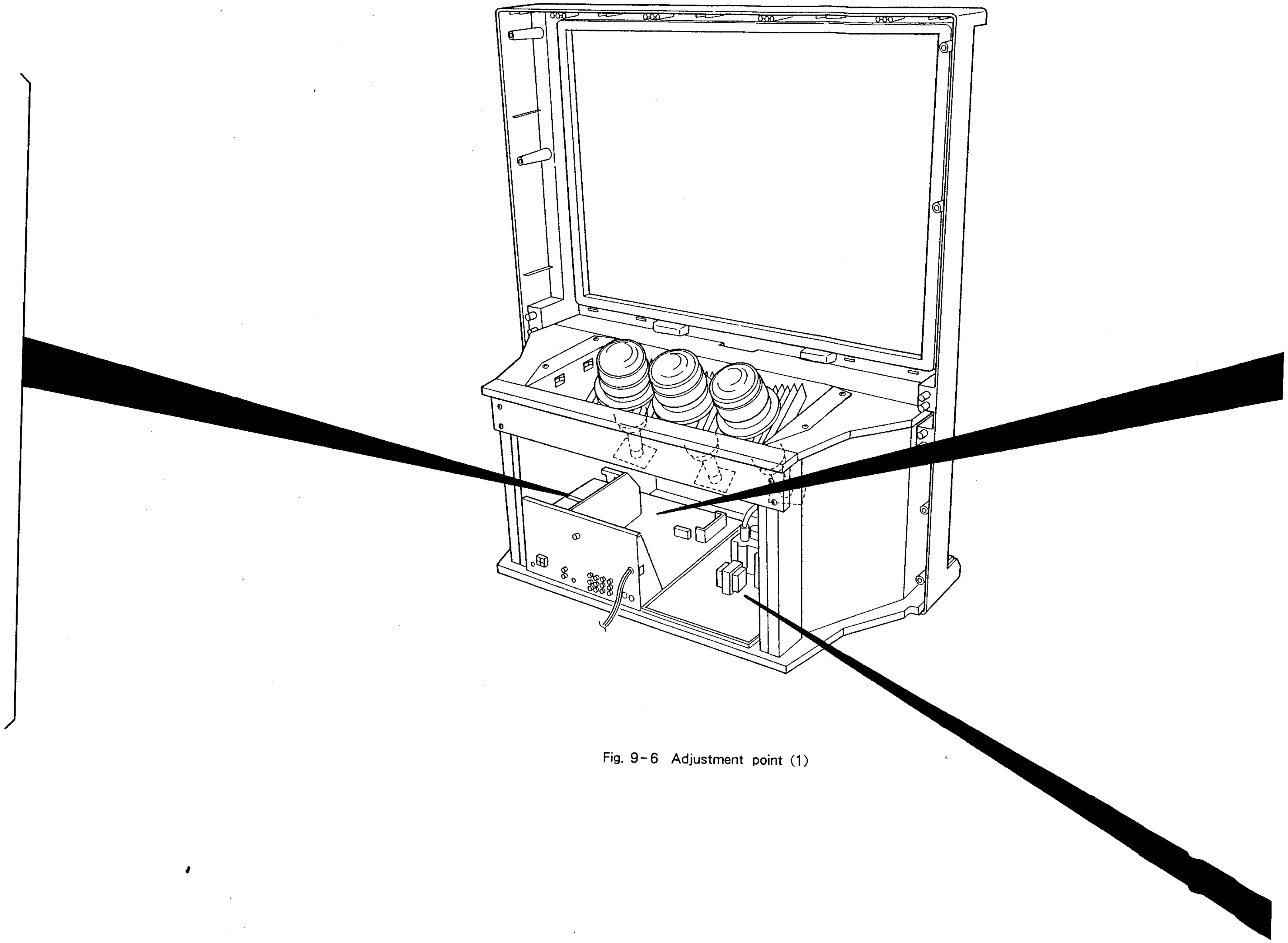


Fig. 9-6 Adjustment point (1)

VIDEO assembly

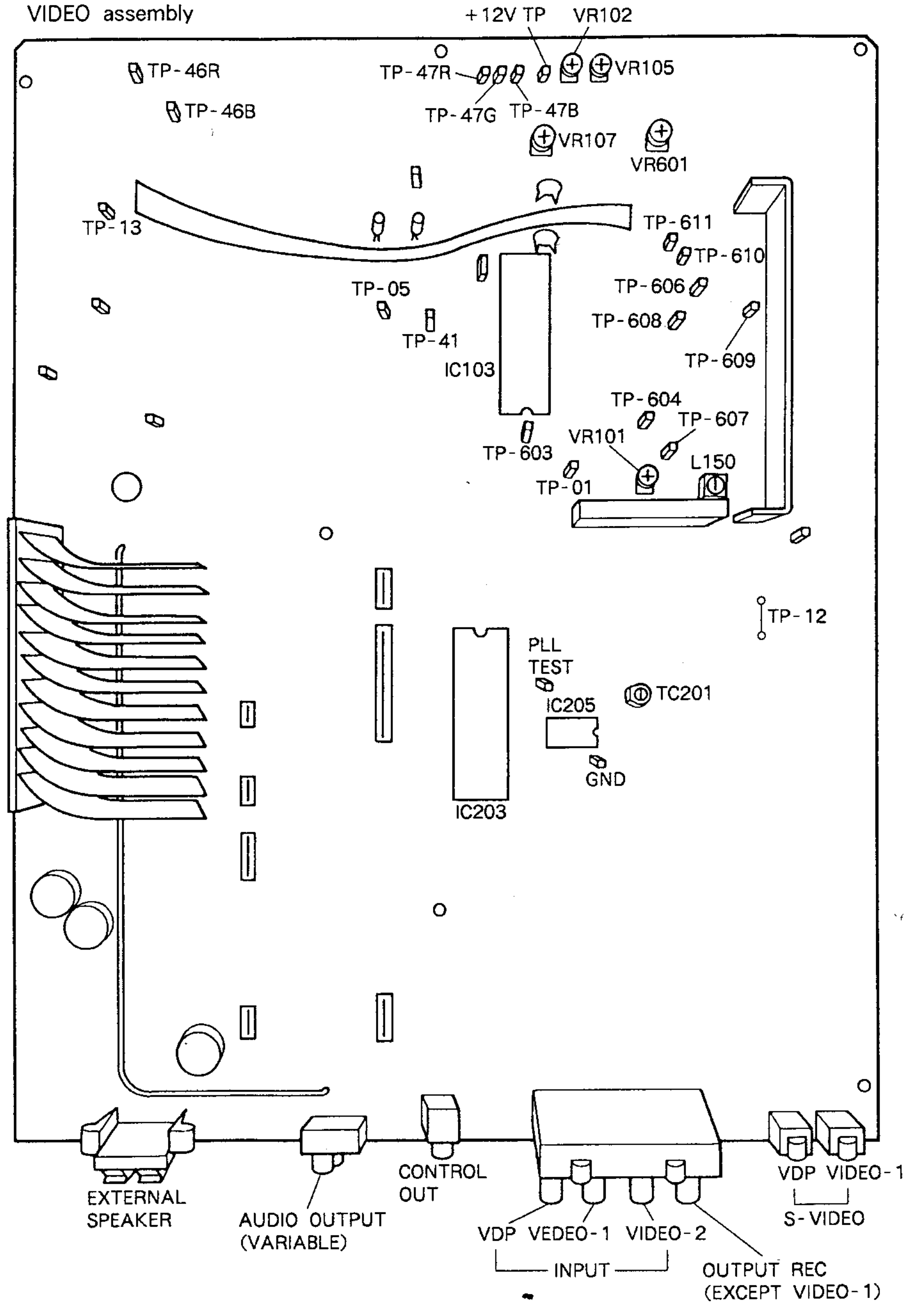
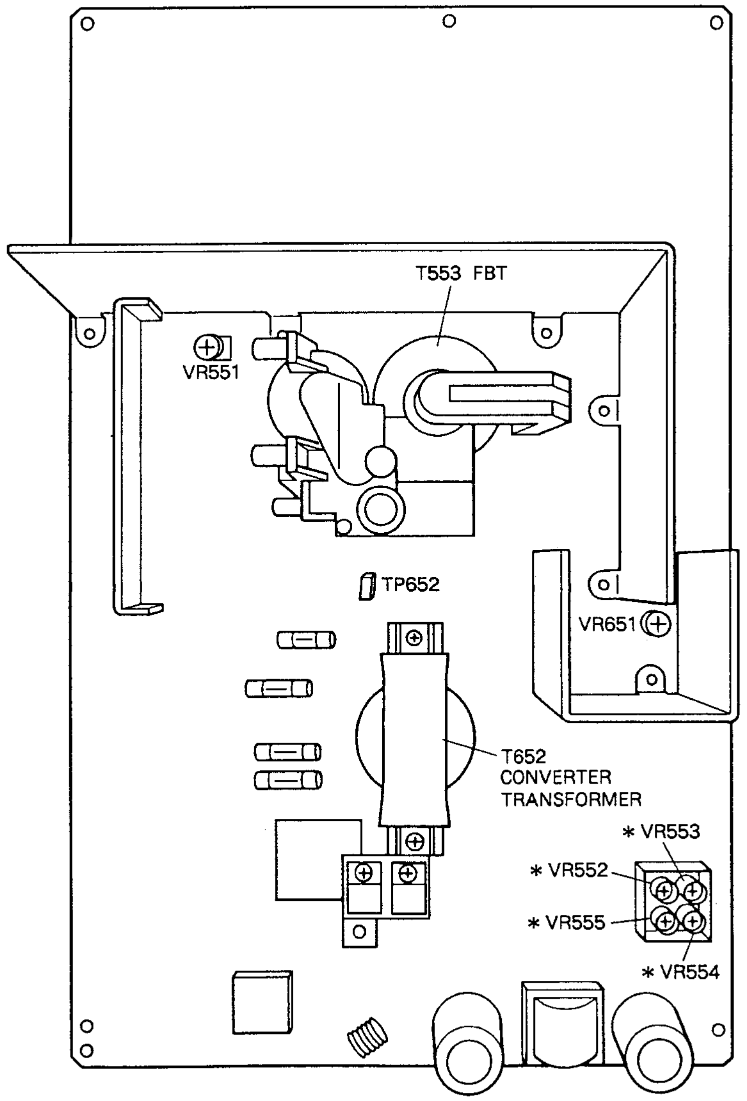

+12V TP
VR102
TP-46R
TP-46B
TP-47R
VR105
TP-47G
TP-47B
VR107
VR601
TP-13
TP-611
TP-610
TP-05
TP-606
TP-608
TP-41
TP-609
IC103
TP-604
TP-607
VR101
TP-603
L150
TP-01
TP-12
PLL
TEST
IC205
TC201
GND
IC203
EXTERNAL
SPEAKER
AUDIO OUTPUT
(VARIABLE)
CONTROL
OUT
VDP
VEDEO-1
VIDEO-2
INPUT
OUTPUT REC
(EXCEPT VIDEO-1)
VDP
VIDEO-1
S-VIDEO

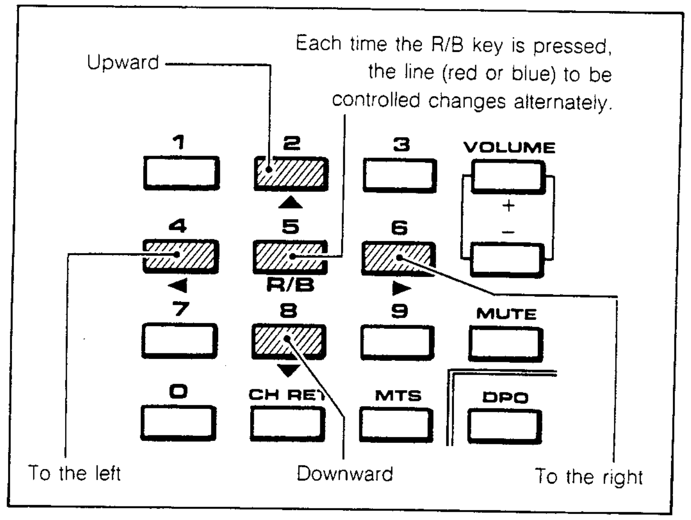
Fig. 9-6-2

DEFLECTION assembly

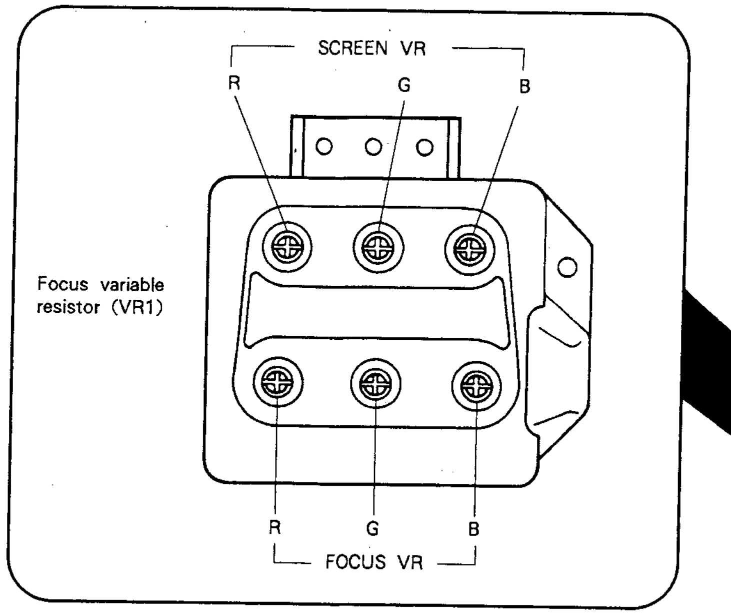

T553 FBT
VR551
TP652
VR651
T652
CONVERTER
TRANSFORMER
∗VR553
∗VR552
∗VR555
∗VR554

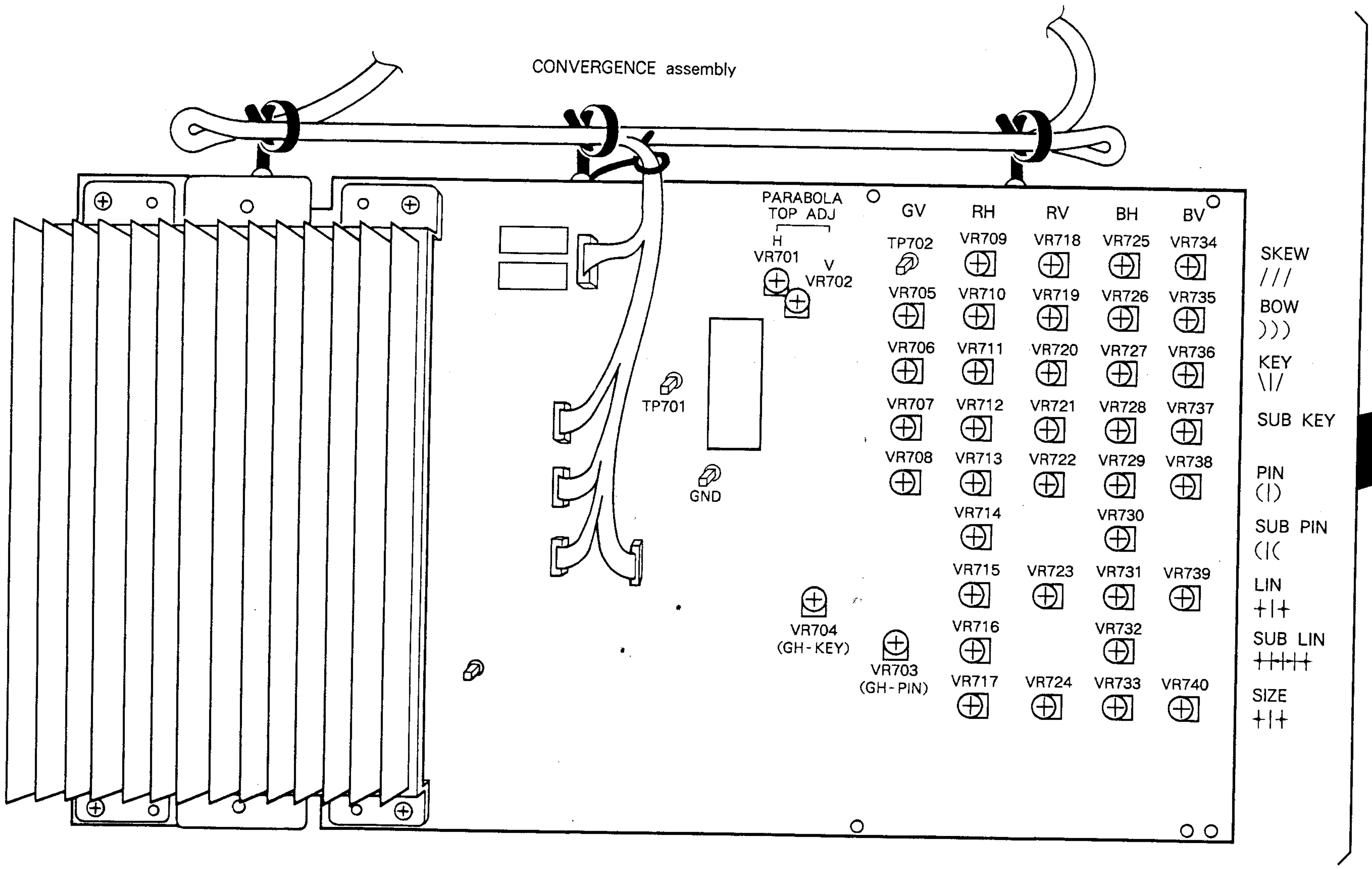
Note : Do not turn VR552 thru VR555 (∗)

Fig. 9-6-3


Upward
Each time the R/B key is pressed, the line (red or blue) to be controlled changes alternately.
1
2
3
VOLUME
+
−
4
5
6
R/B
7
8
9
MUTE
0
CH RET
MTS
DPO
To the left
Downward
To the right

REMOTE CONTROLER KEY FUNCTION FOR CONVERGENCE


SCREEN VR
R
G
B
Focus variable resistor (VR1)
R
G
B
FOCUS VR


CONVERGENCE assembly
PARABOLA TOP ADJ
H
V
VR701
VR702
TP701
GND
VR704 (GH-KEY)
VR703 (GH-PIN)
GV
RH
RV
BH
BV
TP702
VR705
VR706
VR707
VR708
VR709
VR710
VR711
VR712
VR713
VR714
VR715
VR716
VR717
VR718
VR719
VR720
VR721
VR722
VR723
VR724
VR725
VR726
VR727
VR728
VR729
VR730
VR731
VR732
VR733
VR734
VR735
VR736
VR737
VR738
VR739
VR740
SKEW
///
BOW
)))
KEY
\|/
SUB KEY
PIN
(|)
SUB PIN
(|(
LIN
+|+
SUB LIN
++++
SIZE
+|+

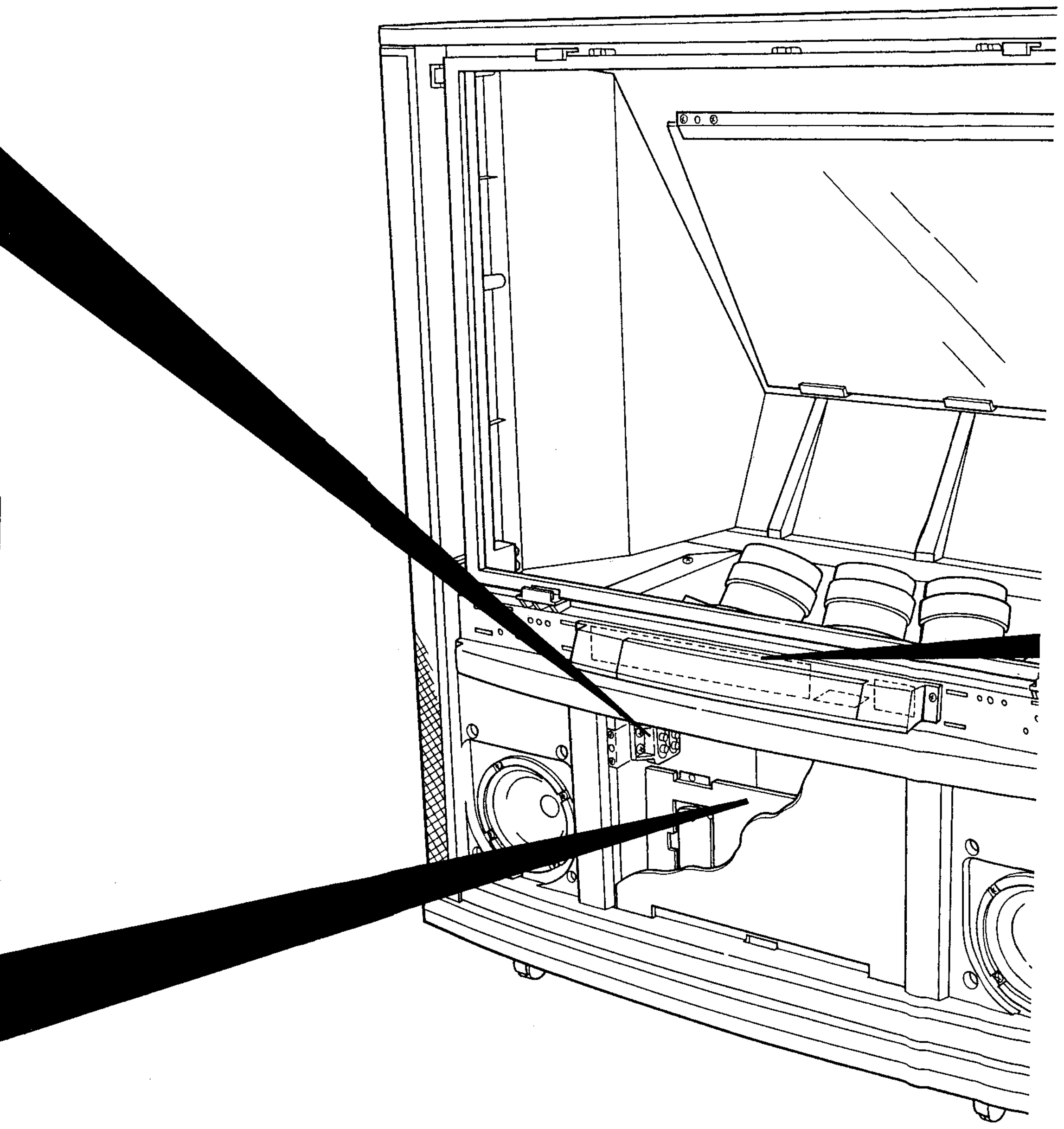
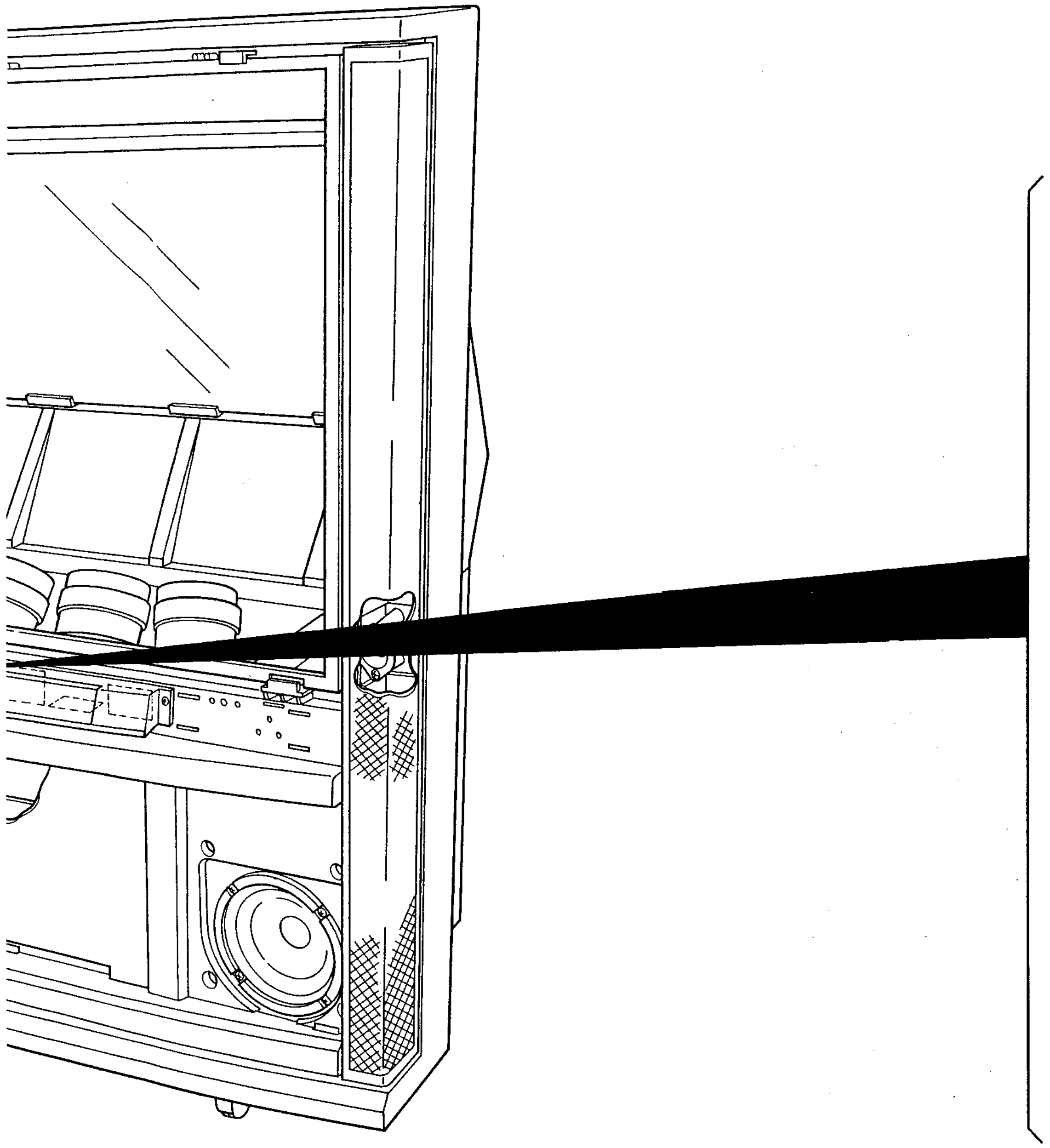
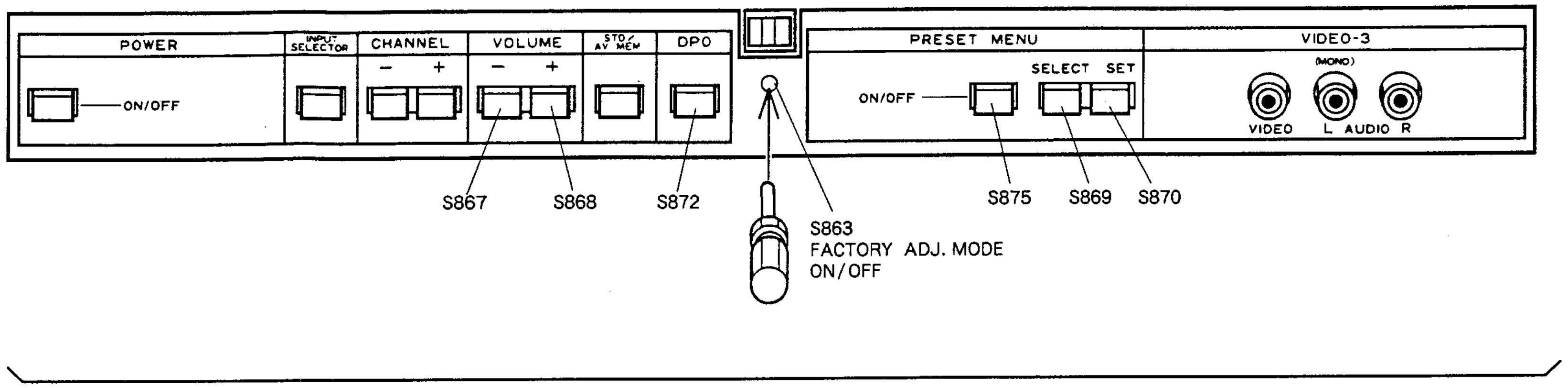


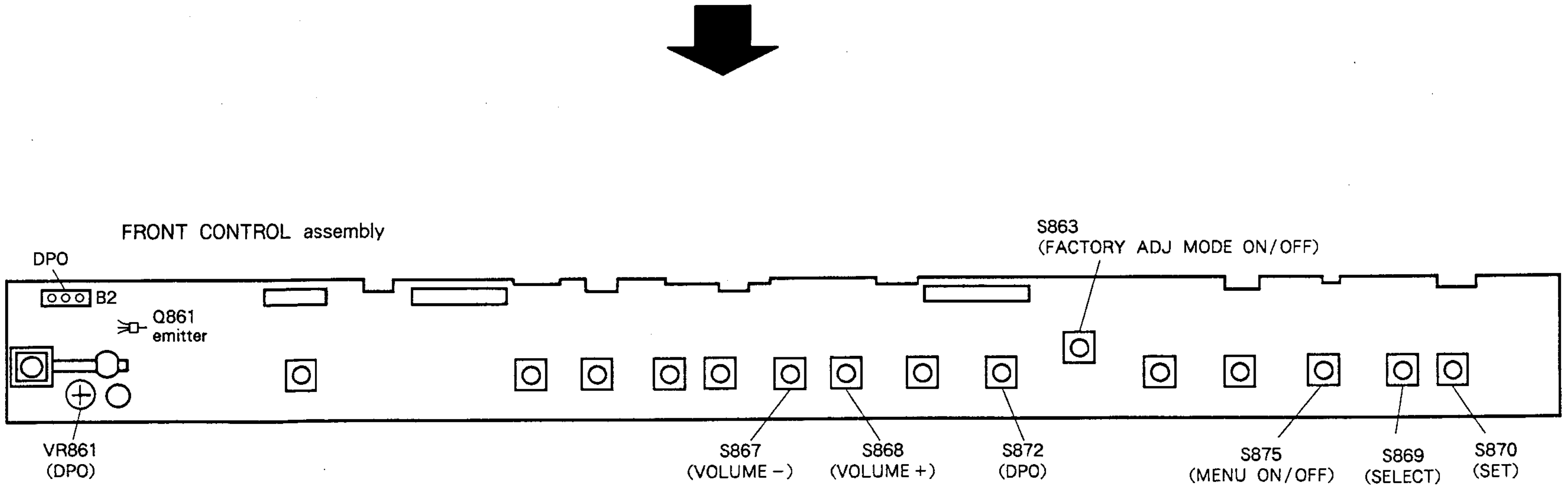
Fig. 9-7 Adjustment point (2)



ıent point (2)

● **Front panel**


POWER
ON/OFF
INPUT SELECTOR
CHANNEL
− +
VOLUME
− +
STD/AV MEM
DPO
PRESET MENU
ON/OFF
SELECT SET
VIDEO-3
(MONO)
VIDEO L AUDIO R
S867
S868
S872
S863
FACTORY ADJ. MODE
ON/OFF
S875
S869
S870


FRONT CONTROL assembly
DPO
B2
Q861
emitter
VR861
(DPO)
S863
(FACTORY ADJ MODE ON/OFF)
S867
(VOLUME −)
S868
(VOLUME +)
S872
(DPO)
S875
(MENU ON/OFF)
S869
(SELECT)
S870
(SET)

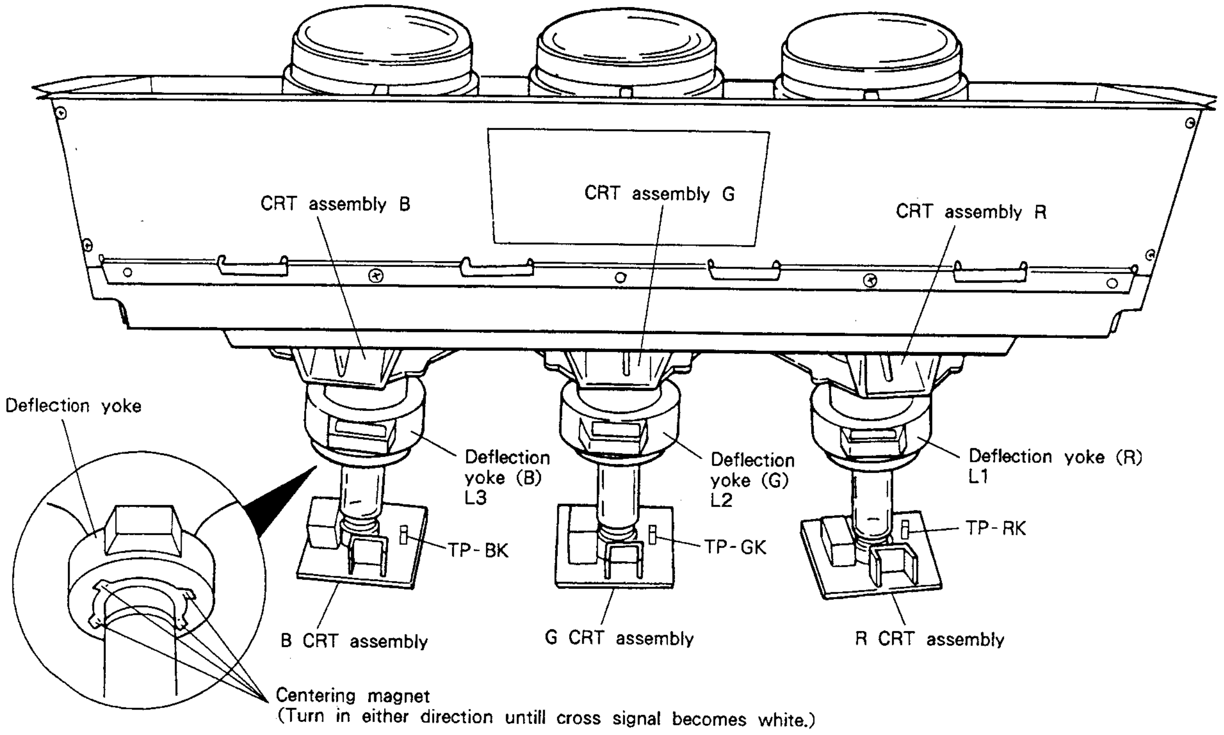

CRT assembly B
CRT assembly G
CRT assembly R
Deflection yoke
Deflection yoke (B) L3
Deflection yoke (G) L2
Deflection yoke (R) L1
TP-BK
TP-GK
TP-RK
B CRT assembly
G CRT assembly
R CRT assembly
Centering magnet
(Turn in either direction untill cross signal becomes white.)

Fig. 9-8 Adjustment point (3)

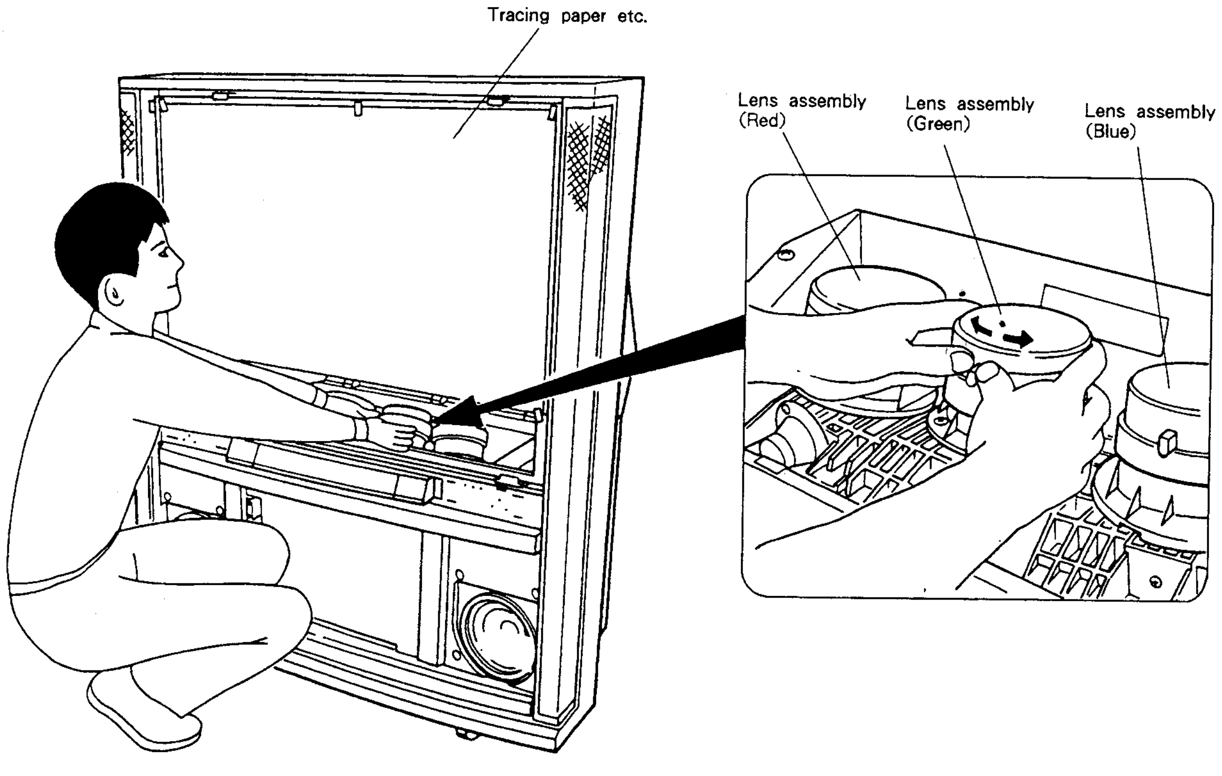

Tracing paper etc.
Lens assembly (Red)
Lens assembly (Green)
Lens assembly (Blue)

Fig. 9-9 Adjustment point (4)

10. REPLACING THE CRT ASSEMBLY

Serviceman Warning

High voltage (31.8kV) will remain at anode of the picture tube for a long period after turning power off even more than one or two weeks.

In this state, it will be really dangerous if any kind of operation which has a risk of electric shock at anode is carried out ; such as replacement of the picture tube (CRT assembly R, G, B) or exchanging and removing an anode cable.

When these kinds of operations are required, be sure to discharge anode voltage following the procedure of "Discharge of anode voltage", page 6.

The anode cables of the CRT assembly R, G, and B in PROJECTION MONITOR RECEIVER are connected in series as shown in Fig. 10-1.

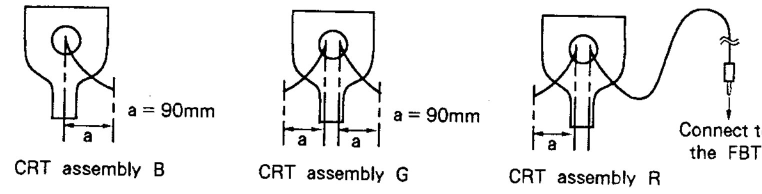
When replacing the CRT assembly, the anode cable have to be cut.

Note : Since the anode cables for the CRT assembly to service supplies are only available in half lengths, either cut longer lengths, or join older lengths of cable to ensure that the original cable length is used.

10.1 WHEN REPLACING THE CRT ASSEMBLY

Perform the replacement after discharged the anode voltage as described in section "4. Discharge of anode voltage".

Each CRT assembly supplied as a spare part is as shown below.


a = 90mm
a
CRT assembly B
a = 90mm
a
a
CRT assembly G
a
Connect to the FBT
CRT assembly R

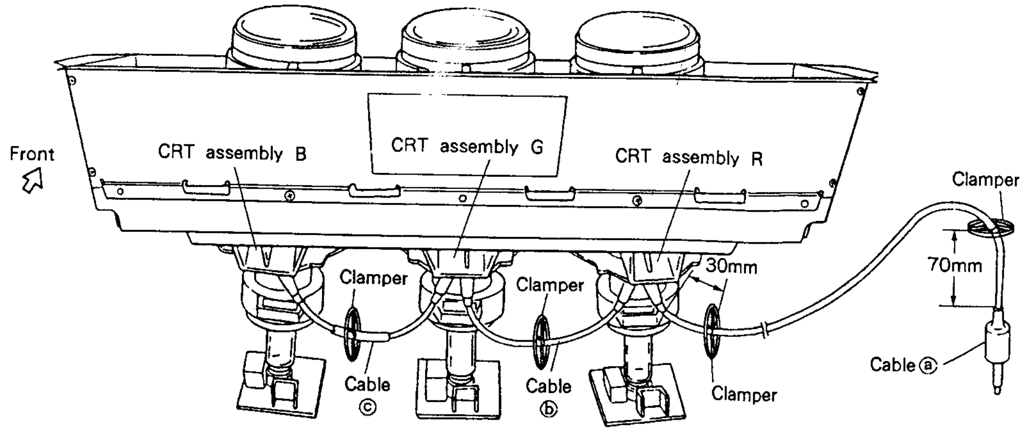

Front
CRT assembly B
CRT assembly G
CRT assembly R
Clamper
Clamper
Clamper
Clamper
30mm
70mm
Cable ⓒ
Cable ⓑ
Cable ⓐ

Fig. 10-1 Connection diagram of the each CRT assemblies

Table 10-1 Cable disconnecting methods

Cable	Replacement CRT assembly		
	When CRT assembly B is replaced	When CRT assembly G is replaced	When CRT assembly R is replaced
Cable ⓐ	—	—	Disconnect the anode cable from the FBT. (Refer to section "9.16 Anode cable connection and disconnection".)
Cable ⓑ	Leave as is	Cut a place 20mm from the exact center towards the CRT assembly G	Cut a place 20mm from the exact center towards the CRT assembly R
Cable ⓒ	Cut a place 20mm from the exact center towards the CRT assembly B	Cut a place 20mm from the exact center towards the CRT assembly G	Leave as is

Note : Do not cut other cables by mistake.

10.2 ANODE

- Peel the sheath
new anode cabl
- The anode cabl
2. Note that th
- The method u
illustrated in Fi
care not to dar

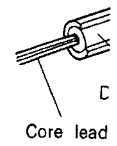


Fig. 10-2

10.3 ANODE

- Join the cut an
to restored as
replacing the F
cable connectio
- Slip two silicon
Fig. 10-4) onto
join.
- Leave the silic

①

②

10.2 ANODE CABLE SHEATH PEELING

- Peel the sheath of the end of cut anode cable and new anode cable are as follows.
- The anode cable structure is outlined in Fig. 10-2. Note that the sheath consists of two layers.
- The method used to peel the sheath back is illustrated in Fig. 10-3. Use a cutter knife, taking care not to damage the core leads.

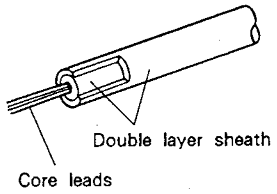

Double layer sheath
Core leads

Fig. 10-2 Anode cable structure

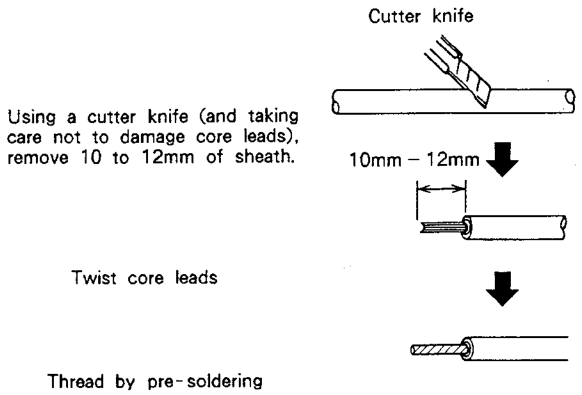
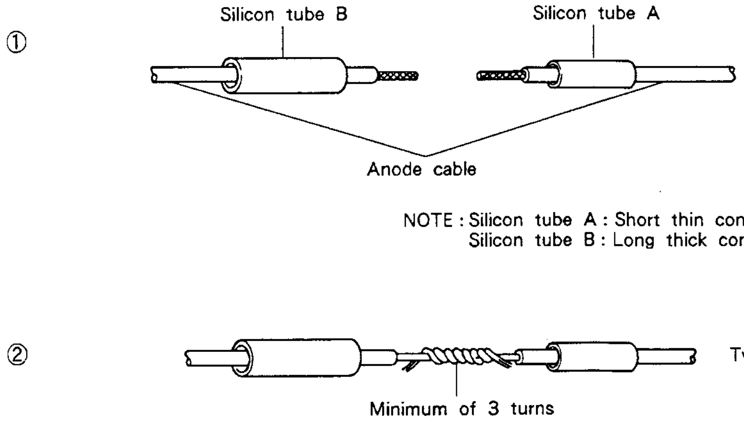

Cutter knife
Using a cutter knife (and taking care not to damage core leads), remove 10 to 12mm of sheath.
10mm – 12mm
Twist core leads
Thread by pre-soldering

Fig. 10-3 Anode cable sheath peeling

10.3 ANODE CABLE JOINING PROCEDURE

- Join the cut anode cable and the new anode cable to restored as shown in Fig. 10-1. Also, when replacing the FBT, refer to section 9.16 "Anode cable connection and disconnection".
- Slip two silicon tubes (silicon tubes A and B in Fig. 10-4) onto the anode cables before making the join.
- Leave the silicon binder to harden overnight.
- The silicon binder is applied to guard the cable core leads from external air. Apply binder liberally. After completing the joint (at step ⑩ in Fig. 10-4-1 thru 3), make a hole in the silicon binder and check that the tube interior cannot be seen.

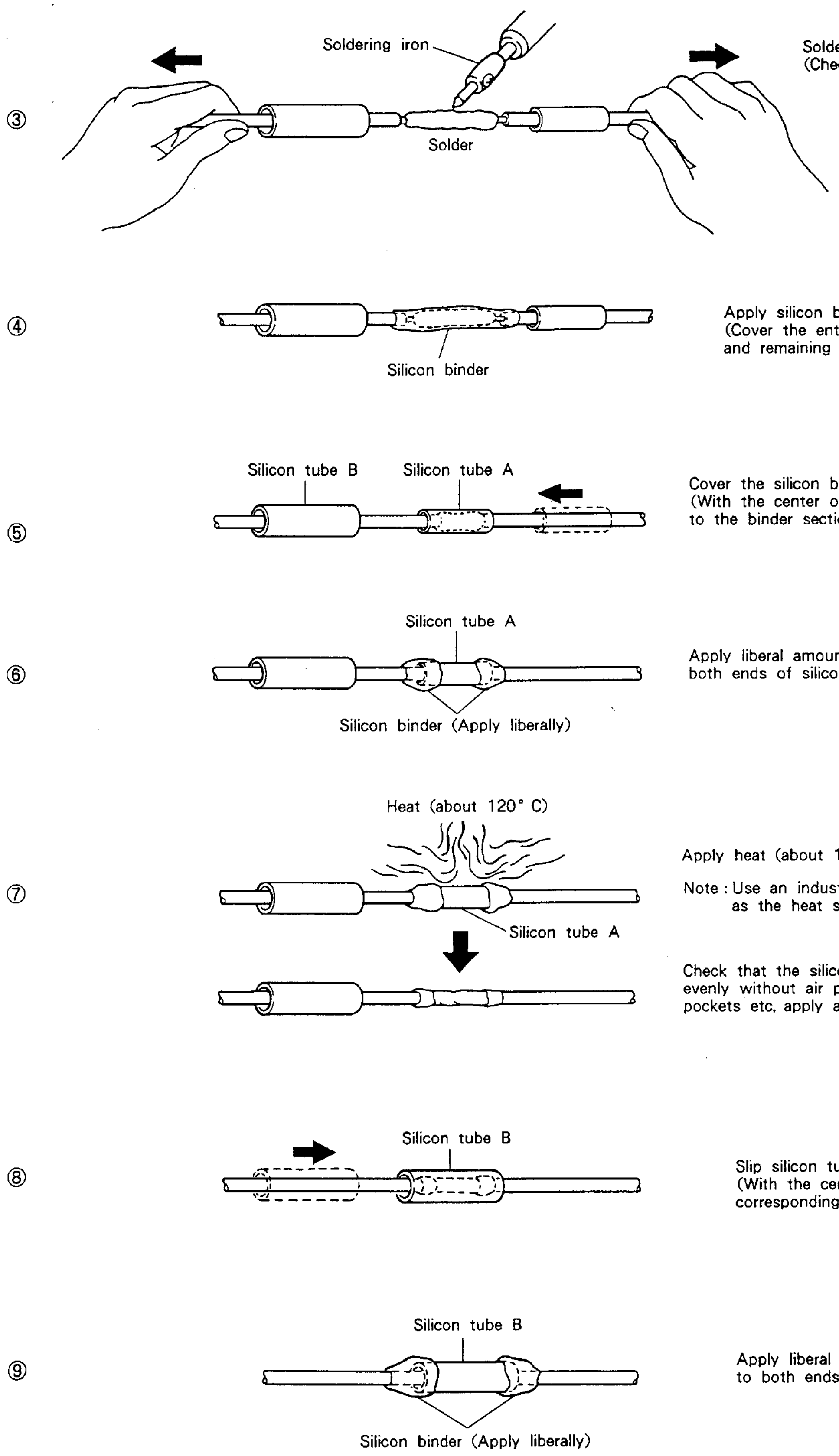

①
Silicon tube B
Silicon tube A
Anode cable
②
Minimum of 3 turns

① Slip silicon tube A and B over anode cable (either side)

NOTE : Silicon tube A : Short thin contracting tube ⎫ Supplied when ordering CRT assembly
Silicon tube B : Long thick contracting tube ⎭ or the anode cable kit.

② Twist cables together through at least 3 turns.

Fig. 10-4-1 Anode cable joining procedure (1)


③
Soldering iron
Solder
④
Silicon binder
⑤
Silicon tube B
Silicon tube A
⑥
Silicon tube A
Silicon binder (Apply liberally)
⑦
Heat (about 120° C)
Silicon tube A
⑧
Silicon tube B
⑨
Silicon tube B
Silicon binder (Apply liberally)

③ Solder the joint, and pull at both ends. (Check against faulty soldering.)

④ Apply silicon binder liberally. (Cover the entire soldered section and remaining bare core leads.)

⑤ Cover the silicon binder section with silicon tube A. (With the center of the silicon tube A corresponding to the binder section)

⑥ Apply liberal amounts of silicon binder to both ends of silicon tube A

⑦ Apply heat (about 120° C) to contract silicon tube A.

Note : Use an industrial drier or soldering iron as the heat source.

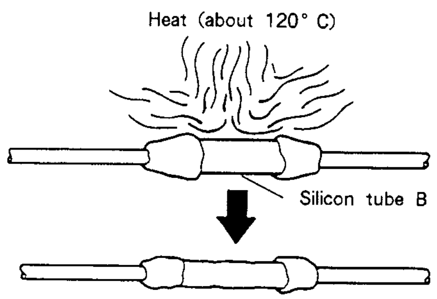
Check that the silicon binder has been applied evenly without air pockets etc. If there are any pockets etc, apply additional silicon binder.

⑧ Slip silicon tube B over silicon tube A. (With the center of silicon tube B also corresponding to the binder section)

⑨ Apply liberal amounts of silicon binder to both ends of silicon tube B.

Fig. 10-4-2 Anode cable joining procedure (2)

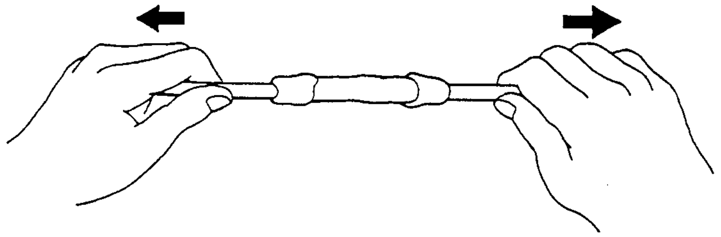
⑩



Apply heat (about 120° C) to contract silicon tube B.
Note : Use an industrial drier or soldering iron as the heat source.

Check that the silicon binder has been applied evenly without air pockets etc. If there are any pockets etc. apply additional silicon binder.

⑪

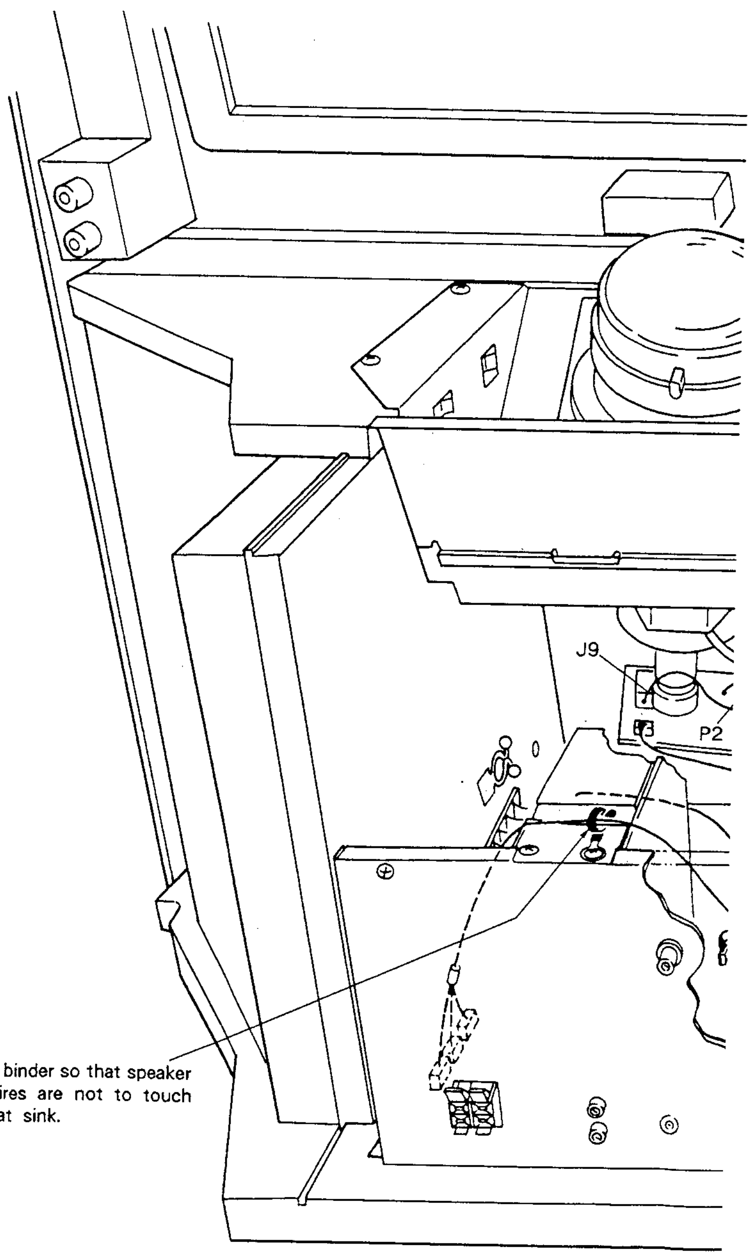


Gently tug both ends to check that the cables do not separate.

Fig. 10-4-3 Anode cable joining procedure (3)

11. WIRING DIAGRAM

When reassembling the wiring rods of this set once disassembled, be sure to recover the styling of wiring rods as it was. The wiring rods that are the most important for styling are the focus screen wires, the anode cable, and jumper wires connecting P2 to N3 and N2 to M3. The following wiring diagram is provided only for reference, and subject to possible changes without notice. Care should be taken so that the wiring rods styling of this set is recovered as it was before disassembling.



Fix the binder so that speaker lead wires are not to touch the heat sink.

Do not touch the le
to the heat sinks.

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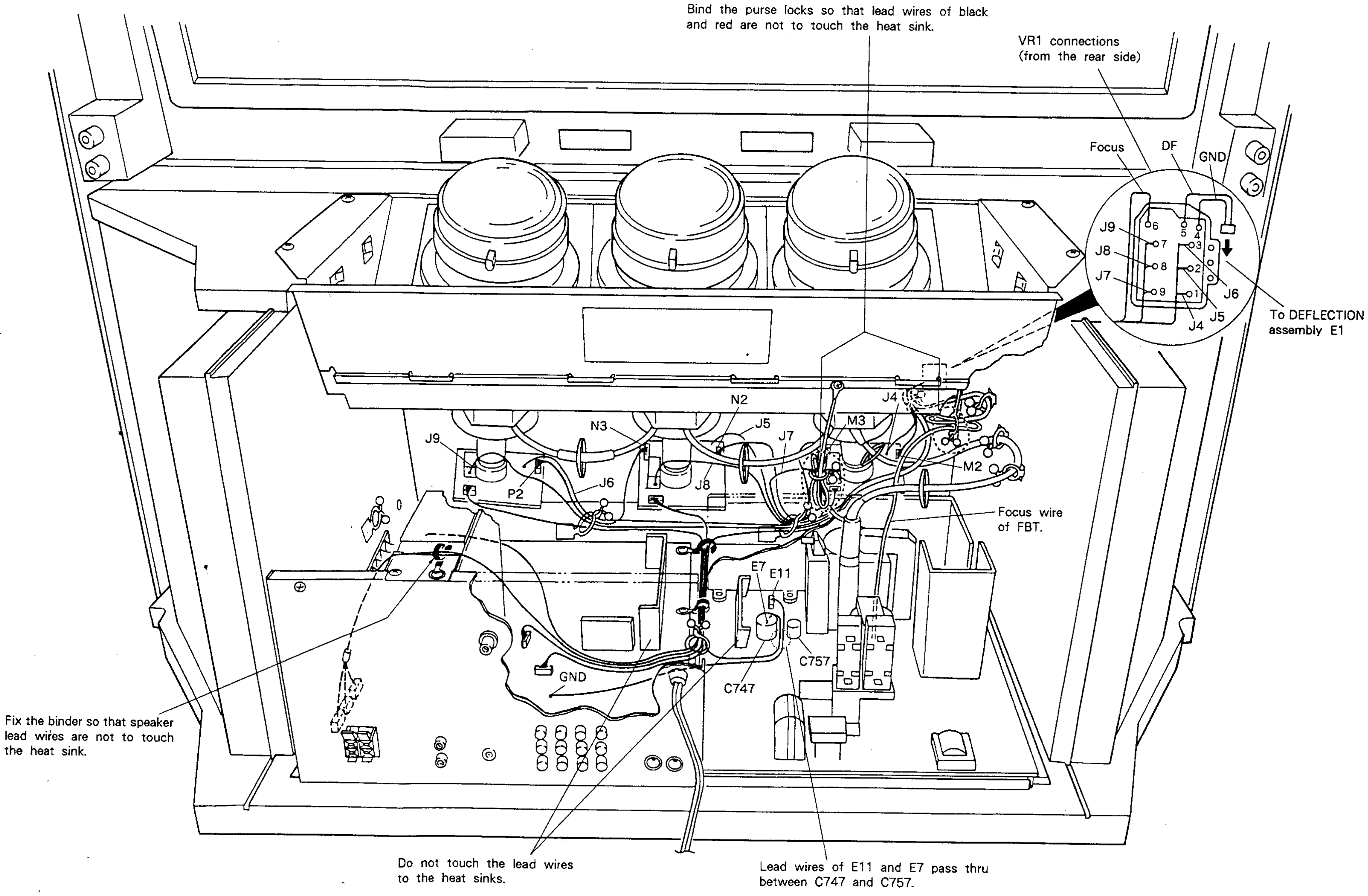
11. WIRING DIAGRAM

When reassembling the wiring rods of this set once disassembled, be sure to recover the styling of wiring rods as it was. The wiring rods that are the most important for styling are the focus screen wires, the anode cable, and jumper wires connecting P2 to N3 and N2 to M3. The following wiring diagram is provided only for reference, and subject to possible changes without notice. Care should be taken so that the wiring rods styling of this set is recovered as it was before disassembling.



Bind the purse locks so that lead wires of black and red are not to touch the heat sink.

VR1 connections (from the rear side)

To DEFLECTION assembly E1

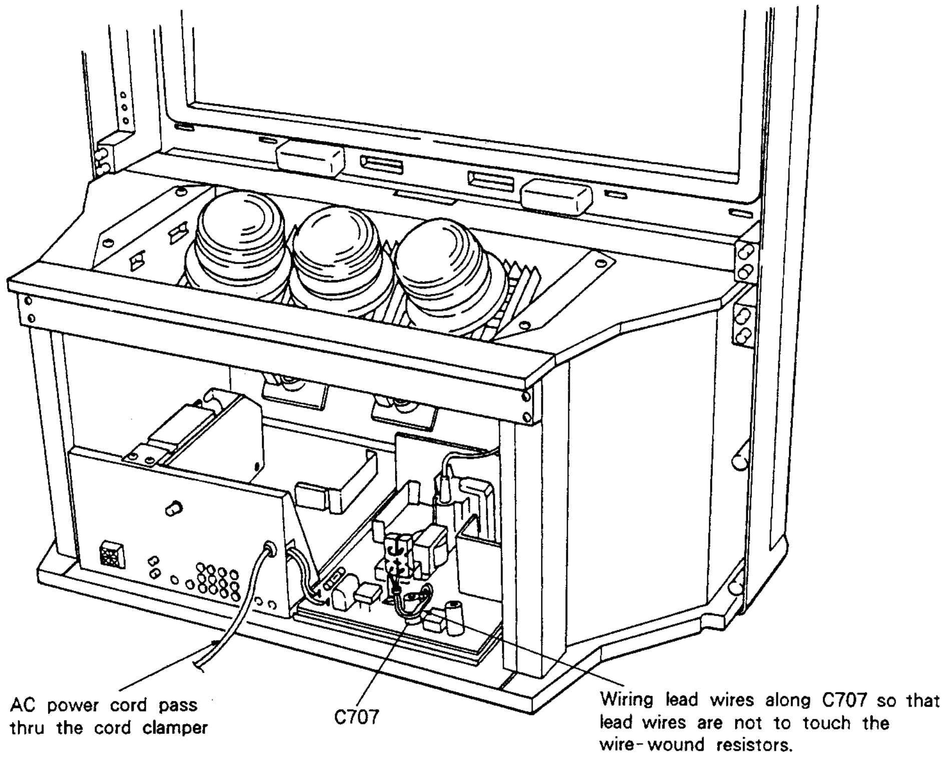
Focus wire of FBT.

Fix the binder so that speaker lead wires are not to touch the heat sink.

Do not touch the lead wires to the heat sinks.

Lead wires of E11 and E7 pass thru between C747 and C757.

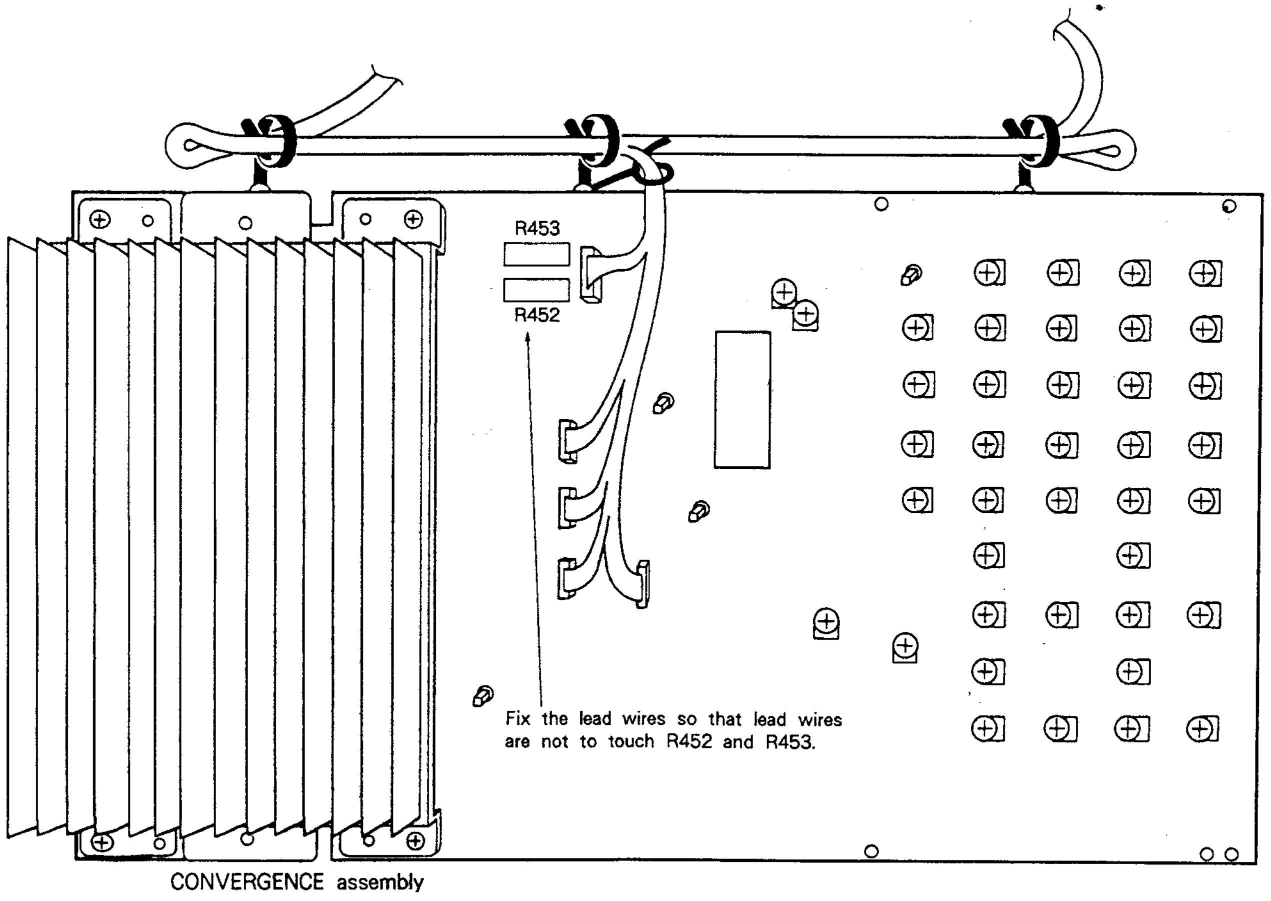
Fig. 11-1 Wiring diagram (1)



AC power cord pass thru the cord clamper

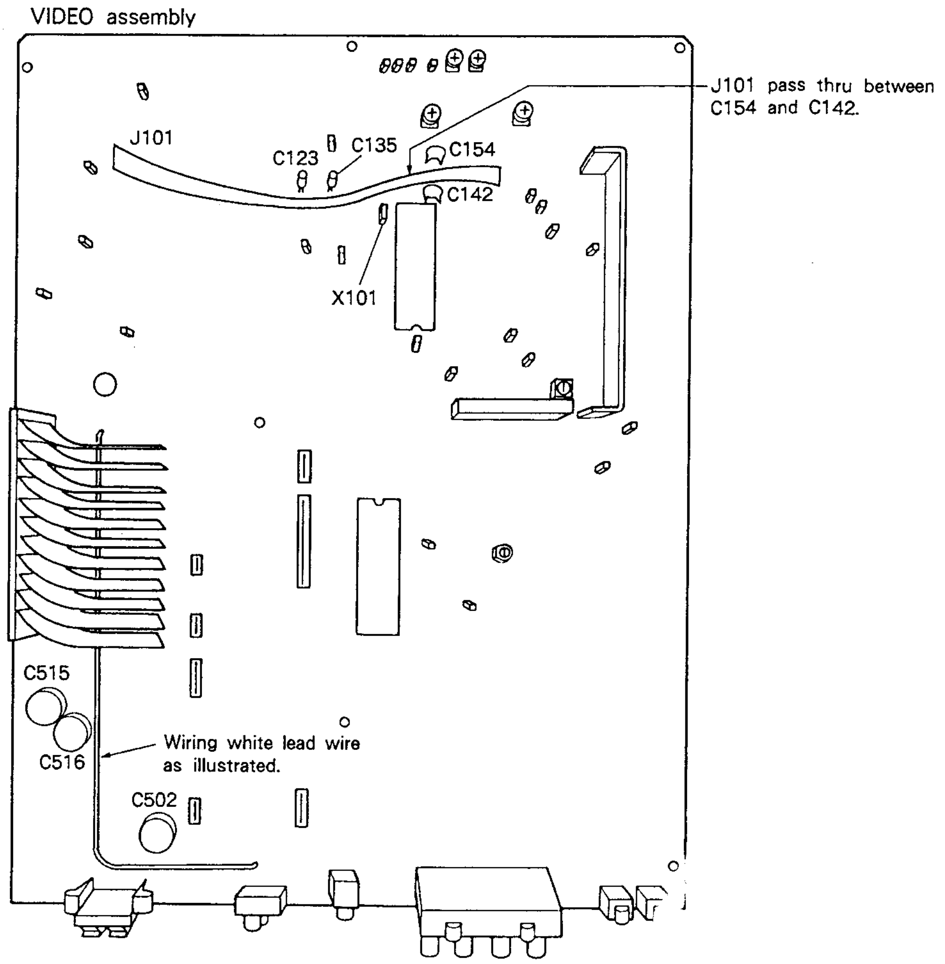
Wiring lead wires along C707 so that lead wires are not to touch the wire-wound resistors.

Fig. 11-2 Wiring diagram (2)


R453
R452
CONVERGENCE assembly

Fix the lead wires so that lead wires are not to touch R452 and R453.

Fig. 11-3 CONVERGENCE assembly


VIDEO assembly
J101
C123
C135
C154
C142
X101
C515
C516
C502

J101 pass thru between C154 and C142.

Wiring white lead wire as illustrated.

Fig. 11-4 VIDEO assembly

12. FOR SI

NOTES :
- Parts without part
- Parts marked by "(
- The ⚠ mark found
  replacing, be sure
- When ordering resi
  Ex.1 When there a
  J = 5 %, and
  560 Ω → 56 ×
  47k Ω → 47 ×
  0.5 Ω → 0R5
  1 Ω → 010 ··
  Ex.2 When there a
  5.62k Ω → 56
- Parts marked by ☆
  If any of these pa

CONTRAST O

**The SD-P403-
KUX1C type wi**

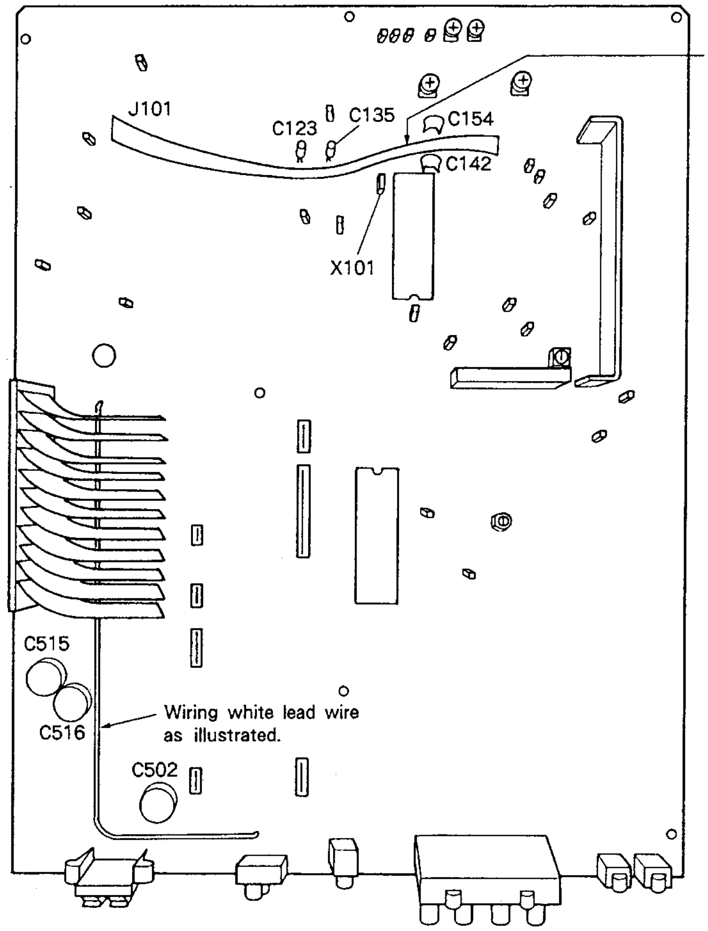
Mark	
☆	DEFLECT Upper ca Operating Operating Grille Grille (K) Front cat Screen fr

DEFLECTION as

**The DEFLECTIO
with the excep**

Mark	S
	L653

VIDEO assembly



J101 pass thru between C154 and C142.

Wiring white lead wire as illustrated.

Fig. 11-4 VIDEO assembly

12. FOR SD-P403-G/KCX1C AND SD-P403-K/KUX1C TYPES

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

  Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

  560 Ω→56 × 10¹ →561 ………… RD1/4PS$\boxed{5}\boxed{6}\boxed{1}$J
  47k Ω→47 × 10³ →473 ………… RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
  0.5 Ω→0R5 ………… RN2H$\boxed{0}\boxed{R}\boxed{5}$K
  1 Ω→010 ………… RS1P$\boxed{0}\boxed{1}\boxed{0}$K

  Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

  5.62k Ω→562 × 10¹ →5621 ………… RN1/4SR$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F
- Parts marked by ☆ are important parts which use X-rays.
  If any of these parts need to be replaced, always replace with specified parts.

CONTRAST OF MISCELLANEOUS PARTS

The SD-P403-G/KCX1C and SD-P403-K/KUX1C types are the same as the SD-P403-G/KUX1C type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		SD-P403-G /KUX1C type	SD-P403-G /KCX1C type	SD-P403-K /KUX1C type	
☆	DEFLECTION assembly	AWV1080	AWV1093	AWV1080	
	Upper carton	AHD1685	AHD1752	AHD1721	
	Operating instructions (English)	ARB1190	• • • • •	ARB1190	
	Operating instructions (English/French)	• • • • •	ARE1134	• • • • •	
	Grille	AMB1470	AMB1470	• • • • •	
	Grille (K)	• • • • •	• • • • •	AMB1521	
	Front cabinet assembly	AMB1515	AMB1515	AMB1522	
	Screen frame	AMB1455	AMB1455	AMB1543	

DEFLECTION assembly (AWV1093)

The DEFLECTION assembly (AWV1093) is the same as the DEFLECTION assembly (AWV1080) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWV1080	AWV1093	
	L653 AF choke coil	ATH1009	ATH1044	47μH (ATH1044)

SD-P403-G

PIONEER
The future of sound and vision.

PROJECTION MONITOR RECEIVER

SD-P403

NTSC

Operating Instructions

Congratulations on your purchase of the PIONEER Projection Monitor Receiver.
If you have not read the cautionary instructions enclosed with these operating instructions, please do so before proceeding.
After learning how to operate the Projection Monitor be sure to keep this manual handy for future reference.

Also, while the official name of the product is the "PROJECTION MONITOR RECEIVER," for the sake of brevity the text refers to it as the "Projection Monitor" or just the "Monitor."

Contents

3 IMPORTANT NOTICE/IMPORTANT
4 PRELIMINARY INSTRUCTIONS
5 FEATURES
6 INSTALLATION
7 INSERTING BATTERIES IN THE REMOTE CONTROL UNIT
7 OPERATING PRECAUTIONS
8 FRONT PANEL FACILITIES
10 REMOTE CONTROL FACILITIES
12 SYSTEM CONNECTION DIAGRAM
14 ANTENNA CONNECTIONS
14 SYSTEM REMOTE CONTROL CONNECTIONS
15 SPEAKERS
16 HOW TO ALIGN COLOR CONVERGENCE
17 TV CHANNEL SELECTION
20 MULTI-CHANNEL TV SOUND (MTS)
21 TUNER PRESET
22 PICTURE AND SOUND ADJUSTMENT
23 AV MEMORY
23 DPO ADJUSTMENT
24 BLOCK DIAGRAM
24 REMOTE CONTROL OPERATION RANGE
25 TROUBLESHOOTING
26 CARE OF YOUR PROJECTION MONITOR
27 SPECIFICATIONS

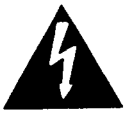
IMPORTANT NOTICE

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO WET LOCATIONS.

The model number and the serial number of this Projection Monitor are located on the rear panel. Please write the serial number on the enclosed warranty card and keep it in a safe place for future reference.

NOTE:
There are no user serviceable parts inside the Projection Monitor.

IMPORTANT

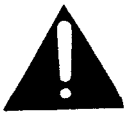


The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

PRELIMINARY INSTRUCTIONS

WHERE TO PUT THE MONITOR

LIGHTING

Bright lights or direct sunlight will dull the picture. Set the monitor so that the screen faces away from windows.

AIR CIRCULATION

Leave space for air to circulate behind the set. Keep away from curtains and other furnishings that could block ventilation.

HEAT DAMAGE

Damage may occur if you leave the set in direct sunlight or near a heater.

OPTIMUM VIEWING DISTANCE

10 to 23 feet is the range recommended for viewing comfort.

POWER SOURCE

This Projection Monitor runs on AC 120V, standard house current.

NEVER CONNECT THE PROJECTION MONITOR TO OTHER THAN THE SPECIFIED VOLTAGE, OR TO DIRECT CURRENT.

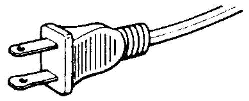
POWER OUTLET

- This set requires an AC 120 volt polarized outlet. The plug will only fit one way. If it will not go in, turn it around and try the other way. If you still are unable to insert the plug, call an electrician to replace the wall socket.
- A damaged cord or plug is a fire hazard. If you notice wear or damage, have it fixed by qualified service personnel.
- Plug directly into the wall socket. Do not use extension cords or other receptacles. Do not overload the outlet; it may cause a fire hazard.

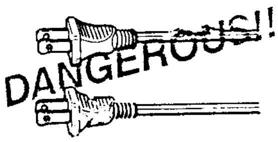
NOTE:

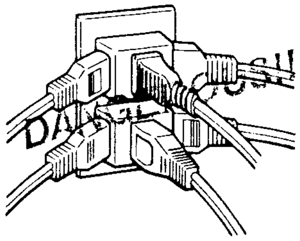
- *Never remove the back cover of the Projection Monitor as this will expose you to dangerously high voltage and other hazards. If the set does not operate properly, unplug it and refer to page 25.*

• POLARIZED PLUG



• DANGEROUS





POWER-CORD CAUTION

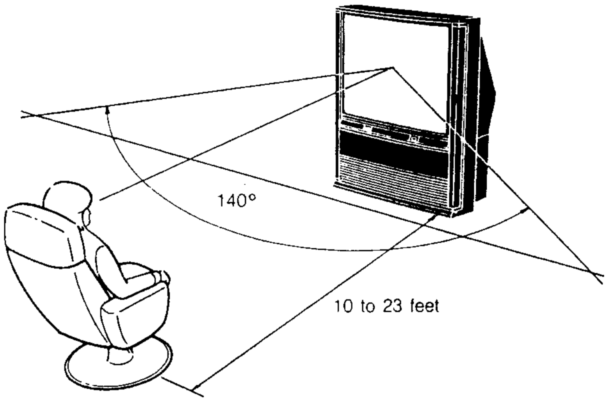
Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.

FEATURES

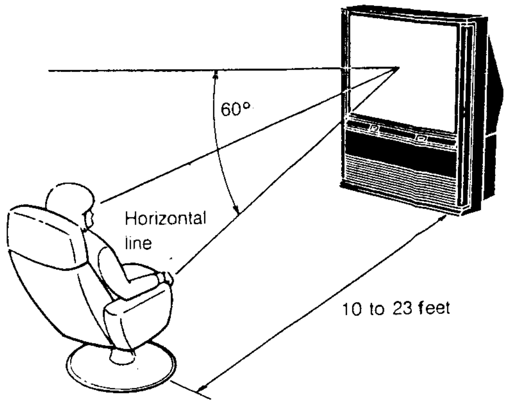
Sharp, Clear Images with 650-line Horizontal Resolution (Video input)
- Sharp detail and crisp outlines are realized, thanks to a 10MHz video bandwidth and Dynamic Picture Control circuitry.
- New, high-resolution picture tubes improve focusing performance.
- Dynamic focusing circuit enhances resolution at picture edges.

Improved Horizontal and Vertical Viewing Angles with Wide Viewing Range Screen
- 140° Horizontal Viewing Angle and 60° Vertical Viewing Angle.

Best Horizontal Viewing Angle



Best Vertical Viewing Angle
Watch from at least ten feet (three meters) away from the screen.
(Optimum viewing distance is 10 to 23 feet.)



You may sometimes see double images or rainbowlike effects if you view from outside of the recommended area shown here.

Amazingly Bright Picture Intensity of 460 Foot-Lambert
- New, highly-efficient lens system passes more light.
- High-power picture tubes employ advanced anode stabilization circuitry and 6000pF capacitors.

Much Greater Contrast with Extended Gradation
- True black reproduction under all conditions, thanks to a Dynamic Black Level Correction Circuit.

Microcomputerized Dynamic Picture Optimizer (DPO)
- DPO (Dynamic Picture Optimizer) circuit detects room light and optimizes the TV picture accordingly.

AV Memory
- After adjusting the picture and sound quality, you can store your settings in "AV memory." Two AV memory settings can be stored and recalled.

INSTALLATION

ANTENNA CONNECTION

Connect to an outdoor antenna or a cable box or centralized antenna terminal. (See page 14 for details.)

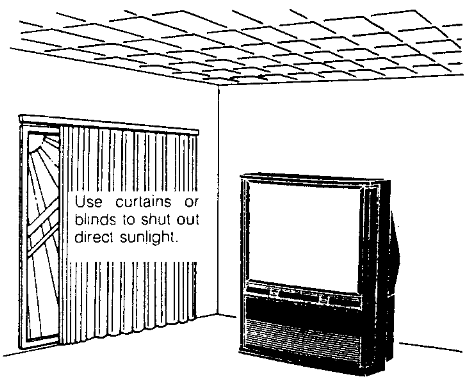
MOUNTING

The Projection Monitor is designed to be placed on the floor or on a sturdy platform. The mounting surface should be flat and steady.

INSTALLATION PRECAUTIONS:
Place of Installation

- *When the Projection Monitor is operating, it is cooled by air-flow through ventilation holes in the rear and bottom. Therefore, avoid placing it in a location where the cooling air-flow is hindered (for example, against a wall).*
- *Avoid places subject to extremely high temperatures or humidity, or to temperatures of 41°F (5°C) or lower. Also avoid dusty places.*
- *Do not set the Projection Monitor in an unstable location (such as on a shaky or a tilted platform).*
- *When setting the Projection Monitor on a floor of soft material, make sure that the floor material is not damaged by the weight of the Projection Monitor.*
- *If the room temperature suddenly rises (or if the Projection Monitor is moved from a cool place to a hot place), dew condensation may occur on the lenses, resulting in picture distortion or color fading. In such a case, simply wait a while (with the POWER SWITCH on) and the dew will disappear.*

Downward spot lights or fluorescent lights in an overhead "Honeycomb" prevent direct illumination of the screen.


Use curtains or blinds to shut out direct sunlight.

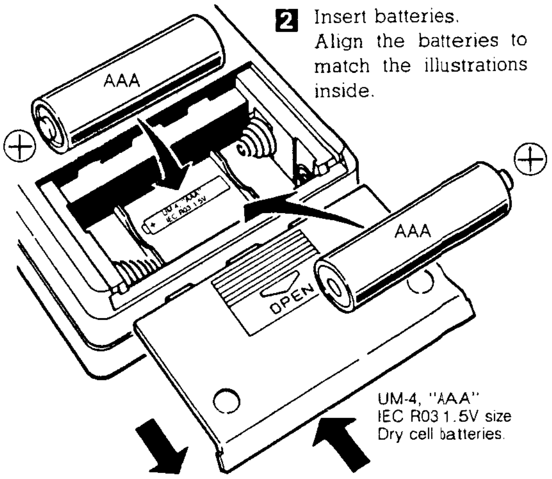
Cover shiny surfaces (floor and walls) with non-reflective materials, (carpet, rugs, wallpaper, etc.).

INSERTING BATTERIES IN THE REMOTE CONTROL UNIT

You will find the remote control unit packed inside the projection monitor box. Open the remote control unit and insert the batteries. Follow the procedure below:

1. Open the battery compartment on the rear of the remote control unit. Press down with your thumb while sliding the lid outward.
2. Note the polarity (+ and −) markings in the case. Insert the supplied batteries so that they match the markings.
3. Close the lid by sliding it back in until it clicks into place.

INSERTING BATTERIES



2 Insert batteries. Align the batteries to match the illustrations inside.

UM-4, "AAA"
IEC R03 1.5V size
Dry cell batteries.

1 Open by pressing with your thumb while sliding outward.

3 Close the lid by sliding back into place.

OPERATING PRECAUTIONS

Keep away from magnetic fields
The picture may be distorted if strong magnetic fields are nearby. External speakers should be set at least two feet (60cm) away from the Projection Monitor. Electric fans and other motor driven appliances and toys may also be sources of magnetism.

When moving the monitor
Pull out the plug and move the set carefully. Be particularly careful not to bump or scratch the screen. To avoid damage to the casters you may need to lift the set when going over irregular surfaces.

Install in a flat, steady place
Do not put the Projection Monitor on a surface that is tilted, unsteady or prone to shake or vibrate. A shaky or slanted platform is dangerous.

Adjust room illumination
Excessively bright or dim lighting may strain your eyes. Draw the curtains if necessary to shut out direct sunlight.

When not using the set for a long time
For safety, unplug the power cord when leaving the set turned off for a long period of time.

Dew (condensation) and picture blurring

- You may see a blurred picture if the set is moved from a cool to a warm location or if room temperature rises very rapidly. This occurs when moisture from the air condenses on the optical parts.
- The picture will return to normal if you leave the set turned on for an hour or two.
- A gradual change in temperature can prevent dew formation.

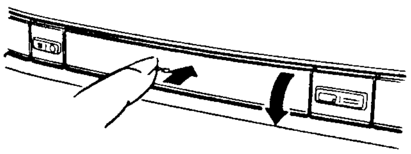
A word about still pictures!

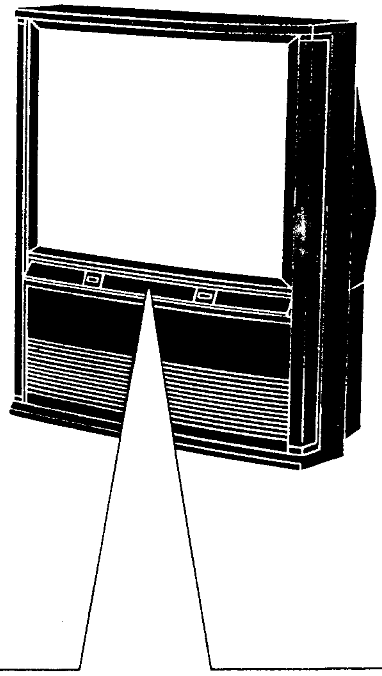
- Do not project a still picture on your CRT for a long period of time.
(For example: when using your CRT for video games, monitoring your personal computer, or while playing back videodiscs.) This can adversely affect your CRT. If this cannot be avoided, reduce the contrast of the picture in order to minimize any damage which might occur.

FRONT PANEL FACILITIES

A flip-down door conceals the control panel. Push gently and release to open the door.
To close the door, lift it back up into place.

Push and release to open.

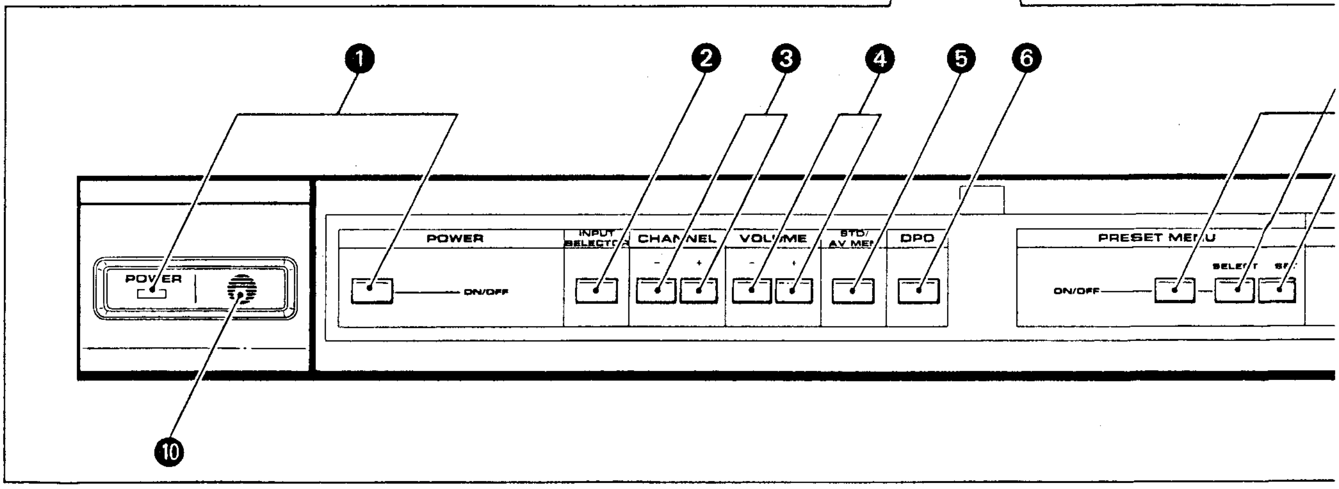




NOTE:

- *If you accidentally pull the door open, it may not shut properly. Push in when shutting the door to restore normal operation.*

Control Panel


1
2
3
4
5
6
10
POWER
POWER
ON/OFF
INPUT SELECTOR
CHANNEL
VOLUME
STD/ AV MEM
DPO
PRESET MENU
ON/OFF
SELECT

★ Use the remote control unit to operate most functions.
See page 10.

FRONT PANEL FACILITIES

❶ POWER SWITCH AND INDICATOR

Press once to turn on the power. Press again to turn the power off. The POWER indicator illuminates when the power is on. This unit is equipped with an Auto OFF circuit. 30 minutes after the input signal is not supplied (for example, the TV broadcast being received terminates broadcasting), the power automatically turns off.

❷ INPUT SELECTOR BUTTON

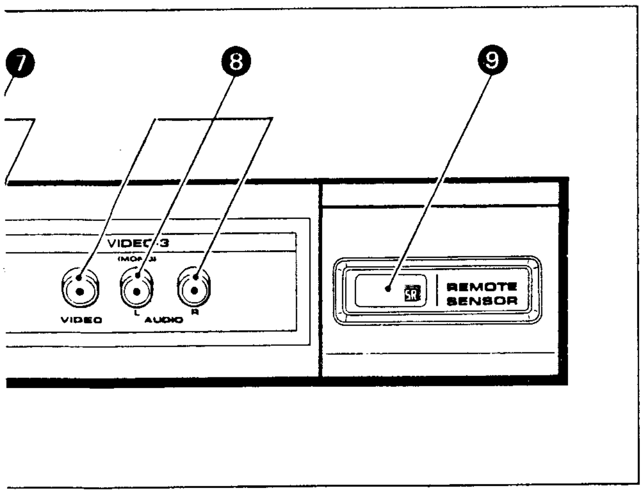
Press to select your program source: TV, video disc player (VDP), VIDEO 1, VIDEO 2 or VIDEO 3. Each press of the button changes the selection to the next source.

❸ CHANNEL BUTTONS

Press plus (+) or minus (−) to tune to a higher or lower channel. Only those channels in tuner preset can be tuned in by this method. (See page 17 for details.)

❹ VOLUME BUTTONS

Press the plus (+) or minus (−) button to raise or lower the volume.



❺ STD/AV MEM (Memory) BUTTON

Press to switch between the standard (STD) picture/sound settings and the AV MEMORY 1 and AV MEMORY 2 settings which have been input with the MENU SET button.

❻ DPO (Dynamic Picture Optimizer) BUTTON

You can turn DPO on or off as desired. When DPO is on, it automatically adjusts the picture to compensate for room illumination. (See page 23 for details.)

❼ PRESET MENU BUTTONS

These buttons are used to perform the following functions: color convergence, tuner presetting, TV-CATV selection, and AV memory storage. For details, refer to the description of each function.

ON/OFF: Press to turn the Menu (functions above) on and off. When the button is pressed on, the function names CONVERGENCE, AV MEMORY, TV-CATV MODE and TUNER PRESET are displayed on the screen.

SELECT: Press to select the function to be operated. The selected function is displayed in red.

SET: Press to memorize the setting.

❽ INPUT JACKS (VIDEO-3)

These front panel jacks are handy for a camcoder or other temporary video source connection.

When the audio source to be connect is monaural, connect the source to the L (MONO) jack.

❾ REMOTE CONTROL SENSOR

This sensor picks up infrared signals from the remote control unit.

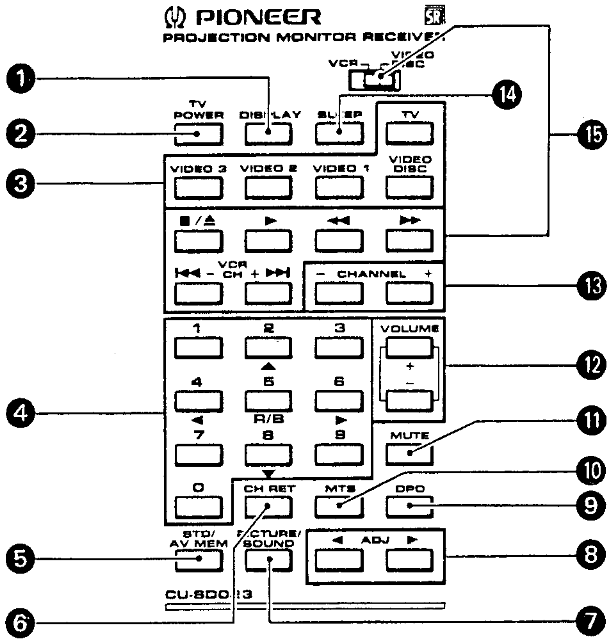
❿ DPO SENSOR

This detects ambient lighting for the DPO (Dynamic Picture Optimizer) circuit which optimizes the TV picture accordingly.

NOTE:

- *Very seldom, an electrical discharge may occur inside the CRT. It makes a short, sharp pop and results in a 1- or 2-second power failure. The power will return automatically. You need not worry about the discharge for it is not a defect. It will disappear with regular use.*

REMOTE CONTROL UNIT FACILITIES



❶ DISPLAY
Press once to display the current channel and/or other information on the screen.

❷ TV POWER
Press once to turn on the Projection Monitor. Press again to turn off.

❸ TV, VIDEO DISC, VIDEO 1 ,VIDEO 2 and VIDEO 3 Input Selectors
Press the key for the source you wish to watch. The screen will display your selection.

❹ Direct Channel Selection Pad
Press the key (or keys) that correspond to the channel that you wish to watch, to turn directly to that channel from any other channel. The [2 ▲], [4 ◀], [5 R/B], [6 ▶] and [8 ▼] keys are also used for color convergence operation. For details, see page 16.

❺ STD/AV MEM
Press to switch between the standard (STD) picture/ sound quality settings and your AV MEMORY 1 and AV MEMORY 2 settings.
This key only recalls settings stored in AV MEMORY; to put a current picture/sound settings into AV MEMORY, use the control panel PRESET MENU buttons. For details, see pages 22 and 23.

❻ CH RET (Channel return)
Press to switch between the current channel and the previous channel you were watching immediately before. This is useful, for example, if you wish to switch back and forth between two sporting events.

❼ PICTURE/SOUND
Press to select the picture or sound parameter to be adjusted.

COLOR ⟶ TINT ⟶ CONTRAST ⟶ BRIGHT
BALANCE ⟵ TREBLE ⟵ BASS ⟵ SHARPNESS

❽ ADJ (Adjust)
Press the ▶ key to increase the value of the item currently selected by the PICTURE/SOUND key, and the ◀ key to decrease it.

❾ DPO (Dynamic Picture Optimizer)
You can turn DPO on or off as desired. When DPO is on, it automatically adjusts the picture to compensate for room illumination. (See page 23 for details.)

❿ MTS
Press to select the reception mode for multi-channel TV sound (MTS).
The switching sequence is as follows:

MAIN ⟶ SAP ⟶ MAIN/SAP ⟶ MONO

⓫ MUTE
Press to temporarily turn off the sound, and again to return to the previous volume level. This comes in handy, for example, when you get a phone call.

⓬ VOLUME +, -
Press the + key to increase the volume, the – key to decrease it. The screen shows your setting as a number and a line of blocks.

⓭ CHANNEL -, +
Press the left (–) or right (+) side of this key to scan up or down among the channels in tuner preset.

⓮ SLEEP
Press to set the sleep timer.
The switching sequence (in minutes) is 90, 60, 30 and OFF (cancel). The screen will confirm your setting and the projection monitor will shut down when that amount of time has elapsed.
While the timer is working, the auto-off facility is rejected.

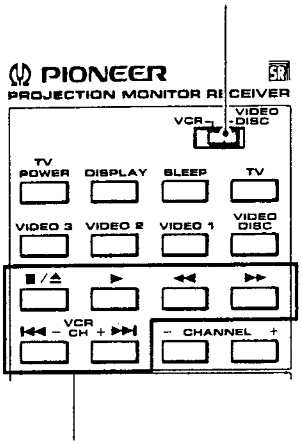
⓯ VCR/VideoDisc Player control keys
If your VCR or VDP (VideoDisc Player) is a Pioneer model bearing the marking SR, using these keys you can remote control that component. For VCR and VideoDisc Player operations, see following section.

REMOTE CONTROL UNIT FACILITIES

Control keys for a Pioneer VCR/VIDEODISC Player bearing the marking SR

You first set the VCR/VIDEO DISC selector to the position according to the source to be operated.

Set this selector.


PIONEER
SR
PROJECTION MONITOR RECEIVER
VCR
VIDEO DISC
TV POWER
DISPLAY
SLEEP
TV
VIDEO 3
VIDEO 2
VIDEO 1
VIDEO DISC
■/⏏
▶
◀◀
▶▶
VCR
|◀◀ – CH + ▶▶|
– CHANNEL +

Operate these keys.

Control keys for VCR

■/⏏

Press once to stop the tape. Press again to eject the video cassette.

▶

Press to begin tape playback.

◀◀, ▶▶

Press the ◀◀ key to rewind the tape at high speed. Press the ▶▶ key to go forward at high speed. During playback, you can press the ◀◀ or ▶▶ key to search forward or backward at high speed. Search continues until you release the key.

VCR CH –, +

Press to select channels on the VCR. Press the – key to tune into a lower channel and the + key to tune into a higher channel.

Control keys for VIDEODISC Player

■/⏏

Press once to stop disc play. Press again to eject the disc.

▶

Press to begin disc play.

▶▶, ◀◀

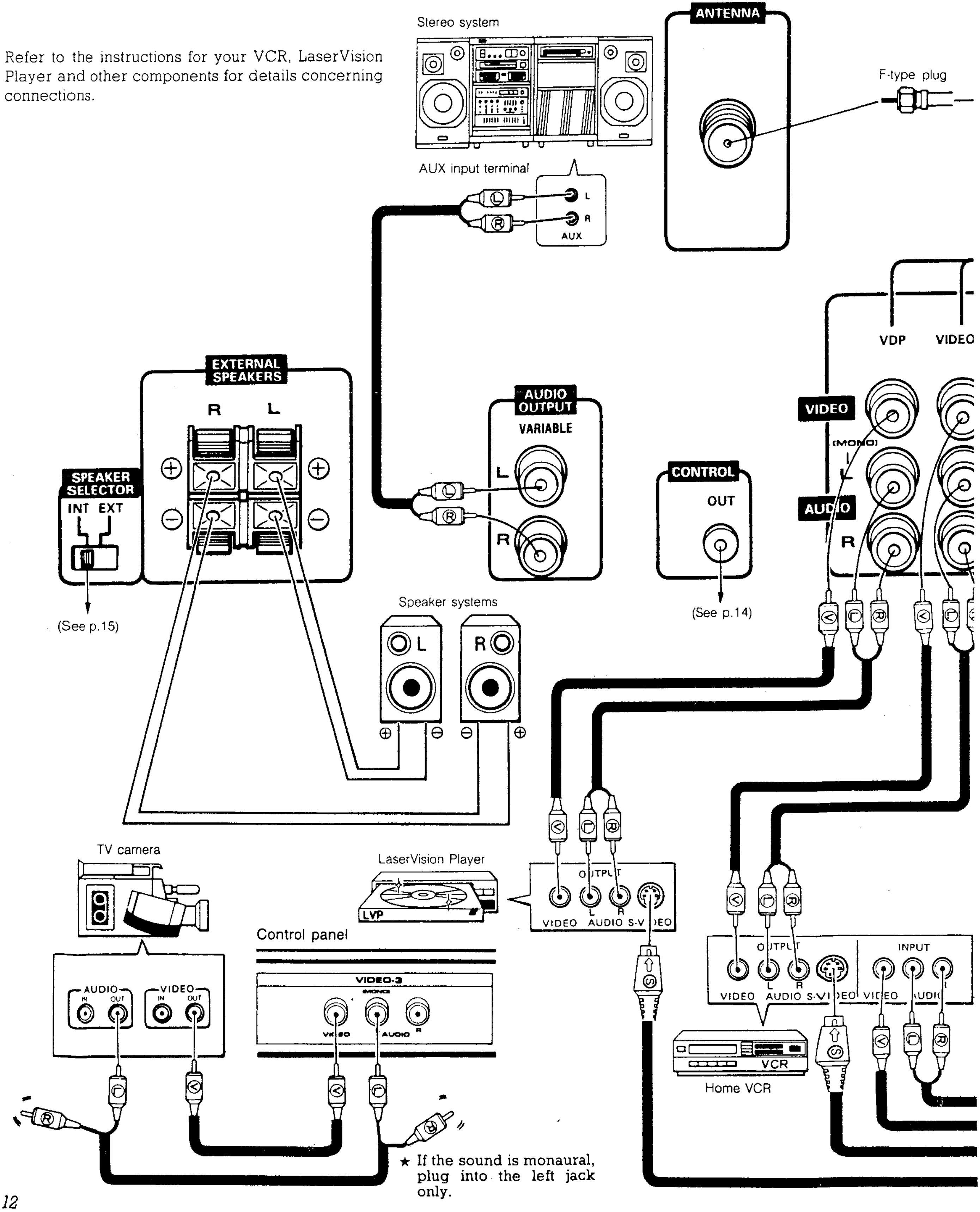
During playback, press the ◀◀ key to scan backward at high speed. Press the ▶▶ key to advance at high speed.

|◀◀, ▶▶|

Press the ▶▶| key to skip to the beginning of the next chapter. Press the |◀◀ key to skip back to the beginning of the chapter in play.
This works only with LaserVision players having chapter skip function.

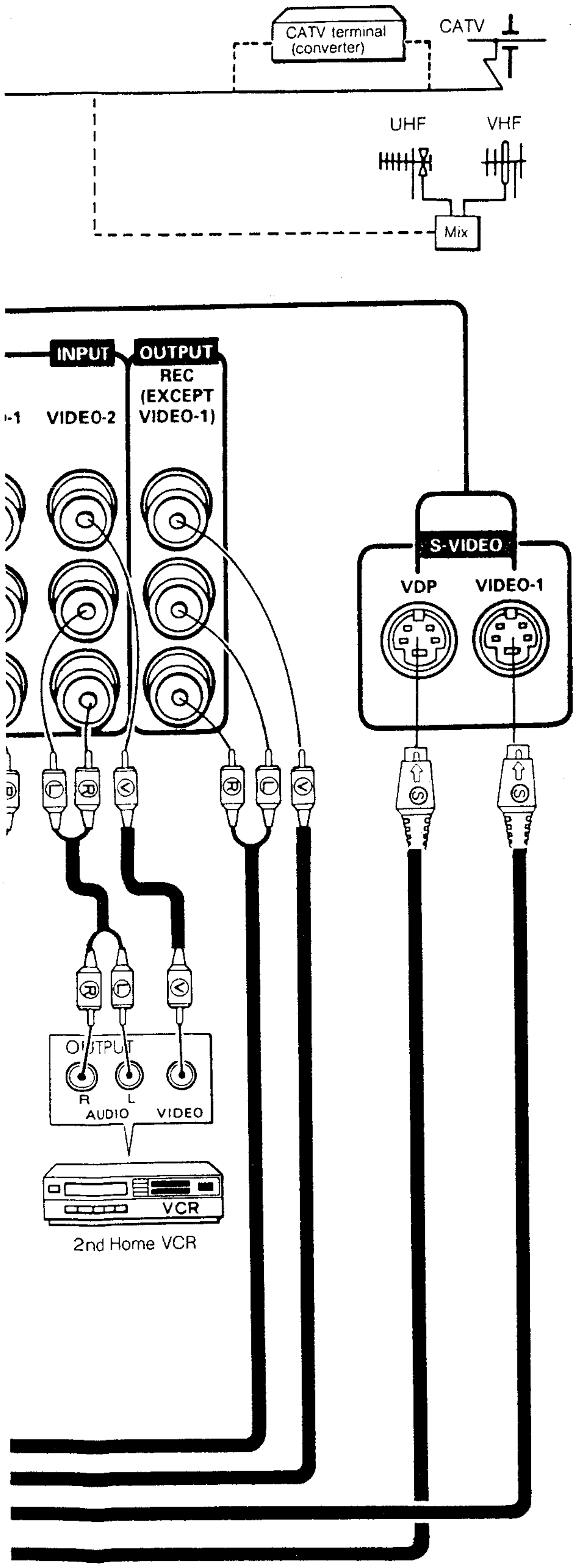
SYSTEM CONNECTION DIAGRAM

Refer to the instructions for your VCR, LaserVision Player and other components for details concerning connections.


Stereo system
AUX input terminal
L
R
AUX
ANTENNA
F-type plug
VDP
VIDEO
EXTERNAL SPEAKERS
R
L
SPEAKER SELECTOR
INT
EXT
(See p.15)
AUDIO OUTPUT
VARIABLE
L
R
CONTROL
OUT
(See p.14)
VIDEO
(MONO)
L
AUDIO
R
Speaker systems
L
R
TV camera
AUDIO
IN
OUT
VIDEO
IN
OUT
LaserVision Player
LVP
OUTPUT
VIDEO
L
R
AUDIO
S-VIDEO
Control panel
VIDEO-3
(MONO)
VIDEO
AUDIO
R
OUTPUT
INPUT
VIDEO
L
R
AUDIO
S-VIDEO
VIDEO
AUDIO
VCR
Home VCR

★ If the sound is monaural, plug into the left jack only.

SYSTEM CONNECTION DIAGRAM



INPUT JACKS

These are three sets of inputs for VCRs, LaserVision players, and other video sources. Use RCA-type pin plug cords (same as those used in hi-fi systems) for connections.
When the audio source to be connected is monaural, connect the source to the L-(MONO) jack.

OUTPUT REC-JACKS

These are used for connecting a VCR for recording, or for linking to another monitor. These jacks output the video and audio signals of the source currently selected by the INPUT SELECTOR.
If you have one VCR, connect these output jacks to your VCR's inputs. Connect the VCR's outputs to the monitor's VIDEO-1 inputs.

NOTE:

- ***If a VCR is connected to the VCR2 input, then that VCR should not be connected to these outputs. The design of some VCRs causes an oscillation feedback loop in such situations.***

CONTROL OUT JACK

This jack is used to extend remote control to other PIONEER equipment bearing the SR (System Remote) mark.
Use mono miniplug cords (available at audio and video shops) to connect the monitor's CONTROL OUT jack to the CONTROL IN jack of the other unit. The other unit can be connected to still another in the same manner, from the CONTROL OUT jack of one to the CONTROL IN jack of the other. If a unit has only a CONTROL IN jack then put that unit last in the sequence. Otherwise, you may connect in any order that is convenient.
If another unit has the SR mark and its own remote control sensor, then the CONTROL OUT/IN jack connection is not required. However, this connection may improve the response of remote control, since you will not need to point the remote control unit at different components. (See page 14.)

AUDIO OUTPUT (VARIABLE) JACKS

These jacks output the audio signal from the video program material currently selected for viewing on the monitor. Connect these audio output jacks to the AUX input jacks of your stereo system. You can then use the remote control unit to adjust the volume.

S-VIDEO INPUT JACKS

Use the S-VIDEO VIDEO-1 jack for input of S-VHS or ED Beta VCR video signals.
Use the S-VIDEO VDP jack for inputting signals from a LaserVision player having S output jack.
When making S-VIDEO connections for either a VCR or a LaserVision player, be sure to also keep the standard VIDEO and AUDIO connections between the VCR/LaserVision player and the Projection Monitor.

SPEAKER SELECTOR

This lets you select either the built-in speaker or external speakers. (See page 15.)

NOTE:

- ***Set to INT when using the built-in speakers. Do not use the INT setting if using speakers connected to the EXTERNAL SPEAKER terminals on the rear panel. At the INT setting, no sound is output from the external speakers.***
- ***Set to EXT when using external speakers (or if you will be directing the output through your stereo system). At the EXT setting, no sound is output from the internal speakers.***

EXTERNAL SPEAKERS TERMINALS (R, L)

For connection of external speakers (purchased separately).

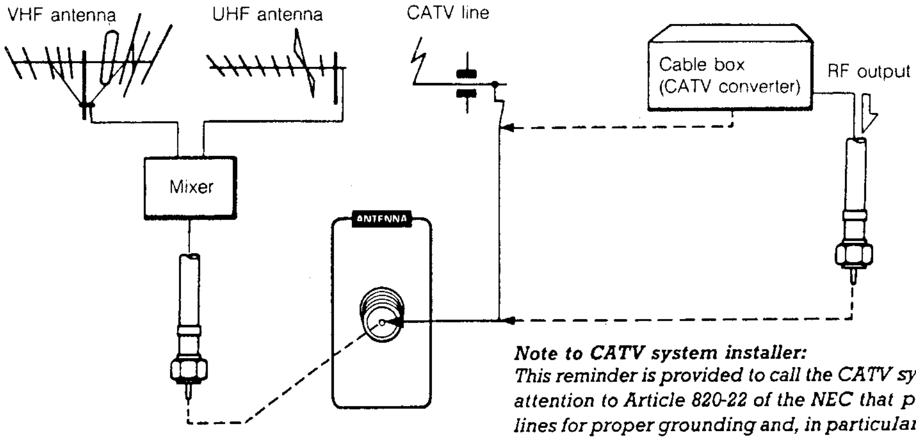
ANTENNA CONNECTIONS

A good color picture depends on a good TV signal. So does good multi-channel (stereo and SAP) sound. To assure the highest signal quality, choose an antenna that suits your reception area and have it properly installed. Ask your dealer for advice.
Of course, if you will be subscribing to cable or have a central antenna for your building, then you will not need an external antenna.
However, proper connections from your TV signal source to your monitor are essential. Please refer to the instructions below.

USING THE ANTENNA CABLE CONNECTOR

The cable connector plugs into the monitor's antenna terminal. This unit is designed to connect to a 75 ohm coaxial cable using an F-type plug.

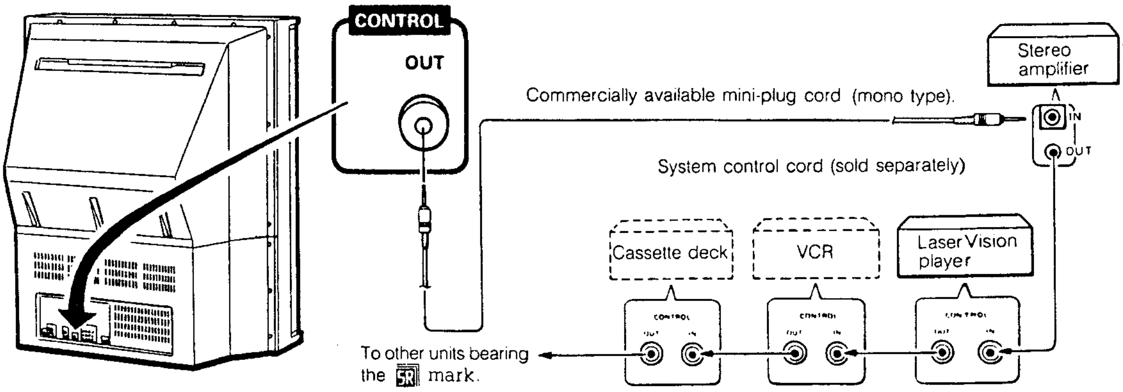
Connect the cable box output or the antenna cable connector into the ANTENNA terminal.


VHF antenna
UHF antenna
CATV line
Cable box
(CATV converter)
RF output
Mixer
ANTENNA

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground should be connected to the grounding system of the building, as close to the point of cable entry as practical.

SYSTEM REMOTE CONTROL CONNECTIONS

Many PIONEER audio and video components can be connected to allow remote control of an entire audio/video system. Use mini-plug cords (monaural) which may be purchased in most audio and video stores. Connect from the CONTROL OUT jack of one unit to the IN jack of the next unit.

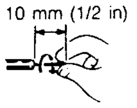

CONTROL
OUT
Stereo amplifier
Commercially available mini-plug cord (mono type).
IN
OUT
System control cord (sold separately)
Cassette deck
VCR
LaserVision player
CONTROL
OUT
IN
To other units bearing the SR mark.

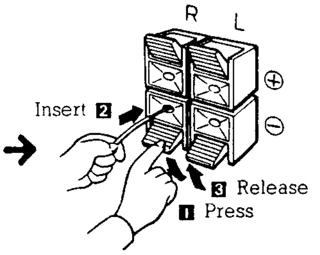
SPEAKERS

CONNECTING EXTERNAL SPEAKER WIRES

Strip each wire so that about half an inch is exposed. Twist the core.

Turn off the power of the monitor and connected equipment.
Press the lever, insert the wire, and release the lever to lock the wire into place. Pull gently on the wire to check that it is securely connected.





Do this for each wire. Be careful to connect the right speaker's plus and minus terminal wires to the "R" "+" and "−" terminals. Likewise, connect the left speaker's plus and minus terminal wires to the "L" "+" and "−" terminals.

Precautions

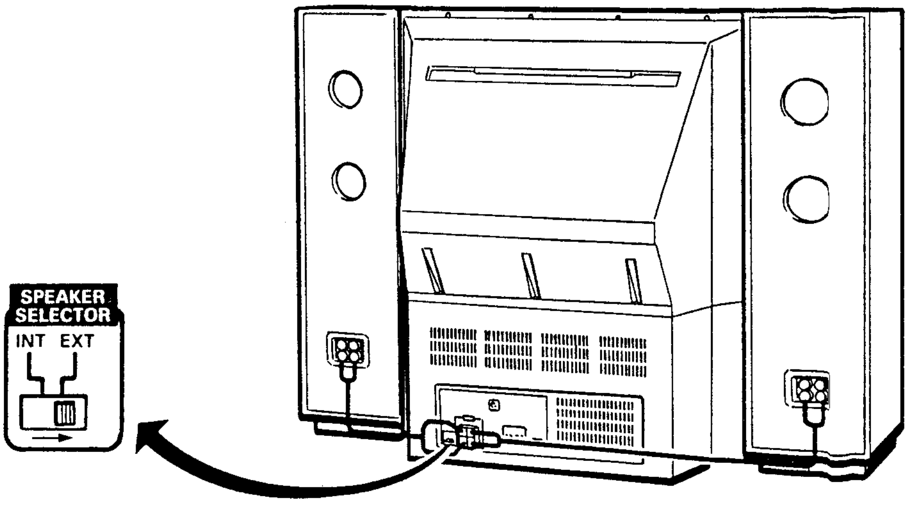
- Be sure that exposed wires do not protrude and touch each other.
- If you do not hear a normal stereo image when listening to a stereo program, it may be because the "+" and "−" connections are reversed for one of the external speakers.
- Be sure that the right speaker is connected to the "R" terminals and the left speaker to the "L" terminals. Be sure that each speaker's two wires are properly connected to the appropriate "+" and "−" terminals.

NOTES:

- ***Use speakers having an impedance rating of from 8 ohms to 16 ohms. Speakers having less than 8 ohms impedance may draw excessive current, triggering the monitor's protection circuit. The protection circuit cuts off output to prevent damage in case of short circuits or abnormally low impedance.***
- ***Ordinary speakers are not magnetically shielded and may disturb the picture if placed too close to the monitor. Move the speakers about two feet away from the monitor if you notice a problem.***

SPEAKER SELECTOR

Set this to the INT position if you will be listening to the built-in speakers. If you have connected external speakers (or if you will be listening through your stereo system), then you can turn off the built-in speakers by setting the selector to the EXT position.



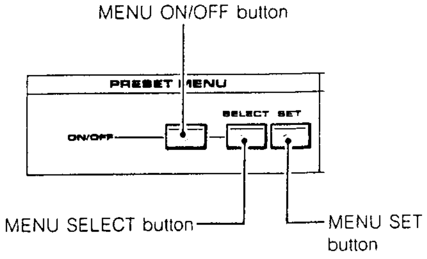
HOW TO ALIGN COLOR CONVERGENCE

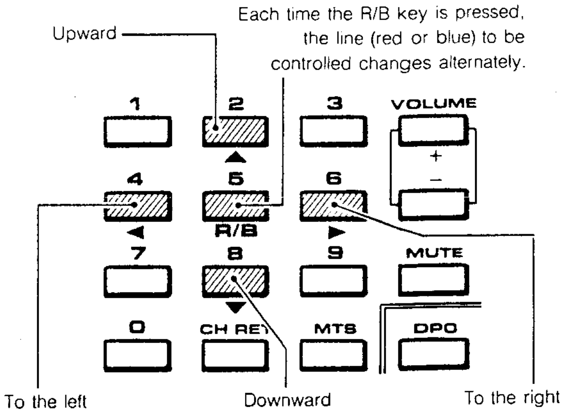
This Projection Monitor uses three separate TV tubes. There are a red tube, a green tube, and a blue tube. The red, green and blue images are projected onto the screen where they converge to form a full color picture. If they do not converge correctly, then you see colored borders around the images.

Your dealer should adjust the color convergence when your set is delivered. However, convergence may drift over time or if you move the set.

Follow the steps below if color convergence alignment is needed.

1. Turn on the power and select an active channel. Wait a moment for the picture to stabilize.
2. Press the MENU ON/OFF button on the control panel. The monitor screen displays the menu (CONVERGENCE, AV MEMORY, TV-CATV MODE, and TUNER PRESET).
   Make sure that "CONVERGENCE" is displayed in red. If not, press the MENU SELECT button so that "CONVERGENCE" turns red.
3. Press the MENU SET button on the control panel. If color convergence is correct, there will be one vertical white line and one horizontal white line, as in figure 1.
4. If you see separate colored lines, use the R/B, ◄, ►, ▲, and ▼ keys on the remote control unit to make the red and blue lines disappear into the other lines.
   Each time the R/B key is pressed, the line (red or blue) to be controlled changes alternately.
   Pressing the ◄ key moves the vertical line to the left, while pressing the ► key moves the vertical line to the right.
   Pressing the ▲ key moves the horizontal line upward, while pressing the ▼ key moves the horizontal line downward.
   In figure 2, for example, press the R/B key to control the red line, and then press the ◄ key so that the red line converges.
   Press the R/B key again to control the blue line, and then press the ▼ key so that the blue line converges.
   Convergence is correct when all three colors (red, green, and blue) converge, producing single white lines.
5. Press the MENU ON/OFF button twice when convergence is correct.


MENU ON/OFF button
PRESET MENU
SELECT SET
ON/OFF
MENU SELECT button
MENU SET button


Each time the R/B key is pressed, the line (red or blue) to be controlled changes alternately.
Upward
1
2
▲
3
VOLUME
+
−
4
◄
5
R/B
6
►
7
8
▼
9
MUTE
0
CH RE
MTS
DPO
To the left
Downward
To the right

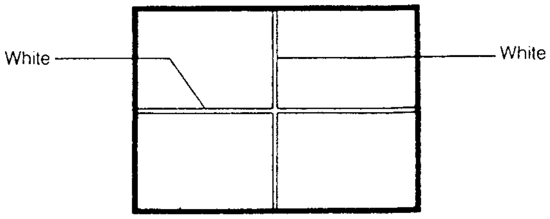

White
White

Fig. 1 Correctly aligned

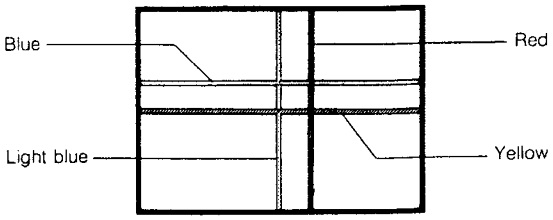

Blue
Red
Light blue
Yellow

Fig. 2 Horizontally and vertically misaligned

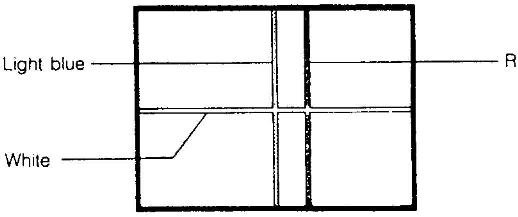

Light blue
Red
White

Fig. 4 Horizontally misaligned

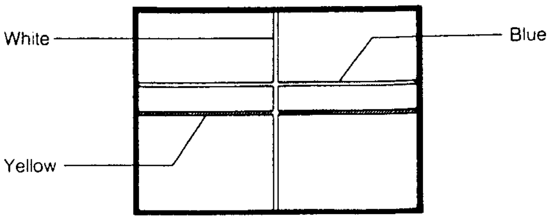

White
Blue
Yellow

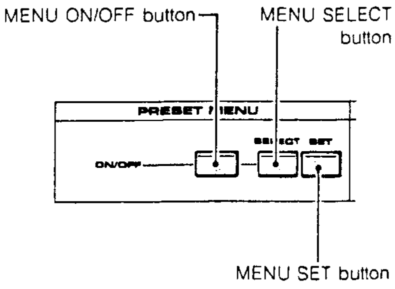
Fig. 3 Vertically misaligned

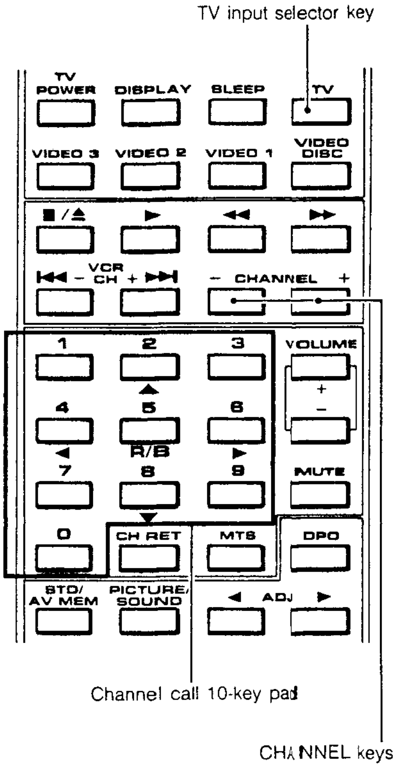
TV CHANNEL SELECTION

The Projection Monitor uses a frequency synthesizer tuning system to permit reception of up to 127 channels (including cable channels). This electronic tuning system gives you two ways of selecting channels.
You can use the remote control keys numbered "0" through "9" to directly input the channel number.
Or you can use the two CHANNEL keys marked "+" and "−" on the remote control unit or the CHANNEL buttons marked "+" and "−" on the control panels to select one channel after another. In this case, you can remove or add channels so that "TUNER PRESET" contains only those channels that you usually watch.
The 127 possible channels include broadcast TV channels 2-13 (VHF), 14-69 (UHF), as well as cable (CATV) channels 1-13 (VHF), 14-22 (mid-band), 23-36 (super-band), 37-65 (hyper-band), and 94-99 (mid-band).

NOTE:

- *TUNER PRESET refers to channel access by pressing the CHANNEL keys marked "+" and "−." You can specify which channels are to be included in TUNER PRESET before using this function. Details follow.*


MENU ON/OFF button
MENU SELECT button
PRESET MENU
ON/OFF
SELECT
SET
MENU SET button


TV input selector key
TV POWER
DISPLAY
SLEEP
TV
VIDEO 3
VIDEO 2
VIDEO 1
VIDEO DISC
■/▲
▶
◀◀
▶▶
VCR CH
− CHANNEL +
1
2
3
VOLUME
+
4
5
6
−
7
8
9
R/B
MUTE
0
CH RET
MTS
DPO
STD/ AV MEM
PICTURE/ SOUND
ADJ
Channel call 10-key pad
CHANNEL keys

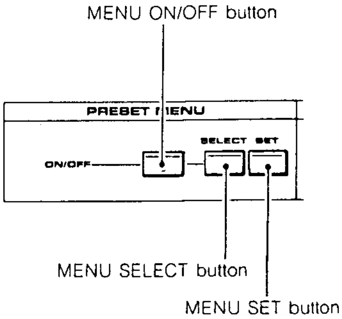
BROADCAST TV CHANNEL SELECTION (When the VHF/UHF antenna is connected to the ANTENNA terminal on the rear panel.)

1. Press the INPUT SELECTOR button so that "TV CHXX" appears on the monitor screen, or press the TV input selector key on the remote control unit.

2. **Select channels directly by pressing the channel number on the remote control "CHANNEL CALL" 10-key pad.** For example, to receive channel "23," press 2 and then 3. For channels 2 through 9, first press zero, then the number. Or just press the number and wait for about four seconds.
   (While waiting for you to input a second digit, the first digit blinks. If you do not input a second digit within four seconds, then the first digit is selected as the channel number.)

3. **Channel memory selection is also possible.** Using the CHANNEL keys marked "+" and "−" on the remote control unit or CHANNEL buttons marked "+" and "−" on the control panel you can scan through the channels which are in tuner preset. To add or delete channels in memory, see TUNER PRESET on page 21.

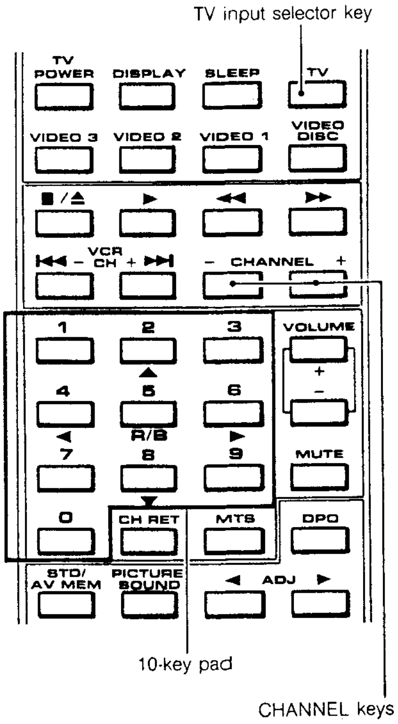
PRESETTING YOUR CATV SYSTEM (When the cable box output is connected to the ANTENNA terminal on the rear panel.)


MENU ON/OFF button
PRESET MENU
SELECT SET
ON/OFF
MENU SELECT button
MENU SET button

1. Press the INPUT SELECTOR button so that "TV CHXX" appears on the monitor screen, or press the TV input selector key on the remote control unit.
2. Turn on the menu with the MENU ON/OFF button and press the MENU SELECT button so that the TV-CATV MODE display turns red.
3. Press the MENU SET button. "AIR," "STD" or "HRC" appears on the screen.
4. Select "STD (standard)" or "HRC" with the MENU SET button. (Ask your dealer or cable service provider which is correct for your local CATV system.) Each press of the MENU SET button moves the selection from AIR to STD, to HRC, and then back around to AIR again.
   Then displayed mode ("STD" or "HRC") is now preset in the ANTENNA memory, so you can receive your local CATV broadcast when the TV is turned on.
5. Press the MENU ON/OFF button twice (or once) to return to normal operation.

CABLE (CATV) CHANNEL SELECTION

It is necessary to preset your local CATV system in ANTENNA memory. For presetting your CATV system, see "PRESETTING YOUR CATV SYSTEM."


TV input selector key
TV POWER
DISPLAY
SLEEP
TV
VIDEO 3
VIDEO 2
VIDEO 1
VIDEO DISC
■/▲
►
◄◄
►►
VCR CH
CHANNEL
1
2
3
VOLUME
4
5
6
7
8
9
R/B
MUTE
0
CH RET
MTS
DPO
STD/ AV MEM
PICTURE SOUND
ADJ
10-key pad
CHANNEL keys

1. Press the INPUT SELECTOR button so that "TV CHXX" appears on the monitor screen, or press the TV input selector key on the remote control unit.
2. Select channels directly by pressing the channel number on the remote control 10-key pad. For example, to receive channel "23," press the 2 and then 3. For channels 1 through 9, first press zero, then the number. Or just press the number and wait for about four seconds. Note that channel numbers "00," and "66" through "93" are not assigned. So the selected channel will not change if you input these numbers.
   You can select VHF channels (1-13), mid-band channels (A1-A6, A-I), super-band channels (J-W), and hyper-band channels (AA-CCC). Refer to the standard cable channel assignment table shown here. Your local service provider's channel assignments may differ from those shown in the table.
3. Channel memory selection is also possible. Using the CHANNEL keys marked "+" and "−" on the remote control unit or the CHANNEL buttons marked "+" and "−" on the control panel you can scan through the channels in channel memory. To add or delete channels in memory, see TUNER PRESET on page 21.

CABLE (CATV) CHANNEL ASSIGNMENT TABLE

Channel number assignment for the cable tuning mode begins with 01 through 65, omits the unassigned numbers 66 through 93, then proceeds from 94 through 99. The specific channel number assignments and the corresponding alphabetical designation are shown below in the channel table.

	VHF L	MID		VHF H	SUPER		HYPER			UHF
TV	2 ~ 6	—		7 ~ 13	—		—			14 ~ 69
CATV	2 ~ 6 (STD) 1 ~ 6 (HRC)	A-6 (94)	A (14)	7 ~ 13	J (23)	Q (30)	AA (37)	KK (47)	TT (56)	—
		A-5 (95)	B (15)		K (24)	R (31)	BB (38)	LL (48)	UU (57)	
		A-4 (96)	C (16)		L (25)	S (32)	CC (39)	MM (49)	VV (58)	
		A-3 (97)	D (17)		M(26)	T (33)	DD (40)	NN (50)	WW (59)	
		A-2 (98)	E (18)		N (27)	U (34)	EE (41)	OO (51)	XX (60)	
		A-1 (99)	F (19)		O (28)	V (35)	FF (42)	PP (52)	YY (61)	
			G (20)		P (29)	W(36)	GG (43)	QQ (53)	ZZ (62)	
			H (21)				HH (44)	RR (54)	AAA (63)	
			I (22)				II (45)	SS (55)	BBB (64)	
							JJ (46)		CCC(65)	

For example: Channel number "14" corresponds to mid-band cable channel "A."

NOTE:

- *Cable (CATV) services can vary from area to area. The channel number assignments shown in the channel table may not correspond with the channel numbers used by your local cable company. Direct tuning to cable channels without the use of the cable company "converter" or "preselector" will depend on the specific channels in use by the cable company. Direct tuning to cable channels is limited to unencoded (unscrambled) channels only. Check your local cable company compatibility requirements.*

MULTI-CHANNEL TV SOUND (MTS)

A multi-channel TV sound decoder is built into the Projection Monitor.

This MTS decoder permits stereo and SAP sound reception. (SAP is a "second audio program" often used for a second language.) The MTS decoder is only effective if the broadcast includes stereo or SAP signals.

NOTE:

- *Broadcast stereo and SAP reception operate in accordance with the Broadcast Television Systems Committee (BTSC) standard only. Stereo audio transmission from CATV (Cable television) systems can vary from area to area and may not be compatible with the BTSC standard.*
  Check with your local cable company for specific compatibility requirements.

STEREO RECEPTION

If necessary, use the remote control MTS key to switch to the MAIN setting. The set will switch automatically between mono and stereo according to the signals received.

NOTE:

The MTS display is shown on the screen when the channel is tuned or the DISPLAY key on the remote control unit is pressed.

SAP (SECOND AUDIO PROGRAM) RECEPTION

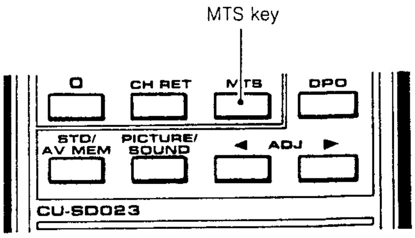
TV stations have the option of broadcasting a second audio program (SAP) signal. This additional sound channel accompanies another mono signal or stereo signal. However, the SAP sound itself is in mono.

Use the MTS key to switch to the SAP or MAIN/SAP setting if you wish to hear "second audio program" sound. (At the MAIN/SAP setting, the SAP sound will come from the right stereo speaker while the left speaker produces the main sound signal.)

You will still hear stereo or mono sound when there is no SAP signal.

MONO RECEPTION

You can force monophonic reproduction of all programs by using the MTS key to select MONO.

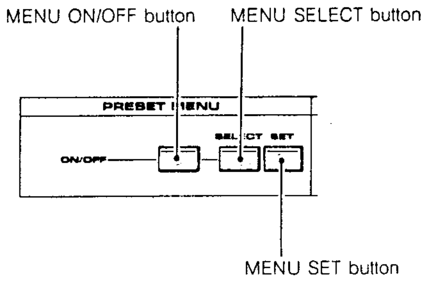


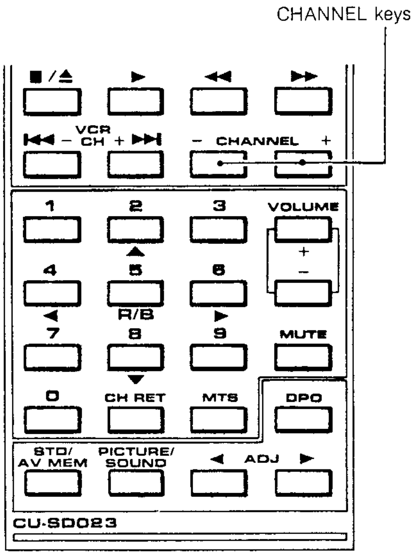
Audio Reception Mode Display (selected by the MTS key)

Mode selected	Broadcasted mode	MONO	STEREO	MONO + SAP	STEREO + SAP
MAIN	Display	TV CH O O	TV CH O O STEREO	TV CH O O MAIN	TV CH O O STEREO <SAP>
	REPRODUCTION Mode	MONO	L, R	MONO (MAIN)	L, R
SAP	Display	TV CH O O	TV CH O O STEREO	TV CH O O SAP	TV CH O O SAP <ST>
	REPRODUCTION Mode	MONO	L, R	SAP	SAP
MAIN/SAP	Display	TV CH O O	TV CH O O STEREO	TV CH O O MAIN/SAP	TV CH O O MAIN/SAP <ST>
	REPRODUCTION Mode	MONO	L, R	L. MONO (MAIN) R. SAP	L. MONO (MAIN) R. SAP
MONO	Display	TV CH O O MONO	TV CH O O MONO	TV CH O O MONO	TV CH O O MONO
	REPRODUCTION Mode	MONO	MONO	MONO (MAIN)	MONO (MAIN)

TUNER PRESET

You can customize this special tuning system so that it will select only your personal choice of channels. When the Projection Monitor leaves the factory, all possible channels are in TUNER PRESET.
Using the menu function you can add or delete channels to or from TUNER PRESET.
You can freely add and delete channels as you like.





OTHER MEMORY FEATURES

The Projection Monitor also remembers many other settings related to day-to-day operation. So when you turn the set on, it comes up with your previous channel and volume settings. It also remembers your previous picture quality settings.

TUNER PRESETTING

TUNER PRESET can be set to match your personal preferences among the channels available in your area. Please refer to your local TV or cable program guide. Follow the procedures below to customize TUNER PRESET to your requirements.

Removing Channels from TUNER PRESET

1. Turn on the monitor.
2. Turn on the MENU ON/OFF button, and press the MENU SELECT button so that the TUNER PRESET display turns red.
3. Press the MENU SET button. The channel numbers appear on the screen.
4. Press the MENU SELECT button or the CHANNEL – or + button so that the channel number to be deleted blinks. (The preset channel numbers are displayed in green.)
5. Press the MENU SET button to delete the currently selected channel from TUNER PRESET. The blinking number turns red. The red numbers show the deleted channel numbers.
6. Repeat steps 4 and 5 to delete additional undesired channels.
7. Press the MENU ON/OFF button twice after presetting is completed.

Adding channels to TUNER PRESET

1. Turn on the monitor.
2. Turn on the MENU ON/OFF button, and press the MENU SELECT button so that the TUNER PRESET display turns red.
3. Press the MENU SET button. The channel numbers appear on the screen.
4. Press the MENU SELECT button or the CHANNEL – or + button so that the channel number to be added blinks. (The deleted channel numbers are displayed in red.)
5. Press the MENU SET button to add the currently selected channel to Tuner Preset. The blinking number turns green.
   The green numbers show the added channel numbers.
6. Repeat steps 4 and 5 to add additional desired channels.
7. Press the MENU ON/OFF button twice after presetting is completed.

Now you can recall the preset channels by pressing the remote control CHANNEL "+" and "–" keys or the control panel CHANNEL "+" and "–" buttons.

PICTURE AND SOUND ADJUSTMENT

The remote control unit has a PICTURE/SOUND key. Each time you press this key, the screen will show a different item for you to adjust. These items are color, tint, contrast, brightness, sharpness, bass, treble, and balance.

1 Press the PICTURE/SOUND key so that the item to be adjusted turns red.

2 Press the ADJ ► key to raise the value of the selected item. Press the ◄ to lower it.

Set each item to any value you like; the current value is shown on the screen.

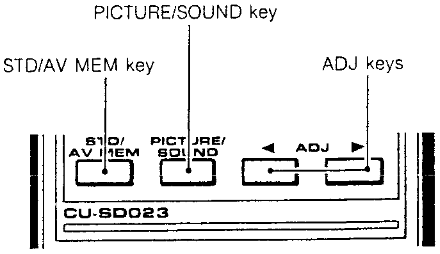
NOTE:

The picture and sound quality settings are automatically set to the standard settings after the POWER switch is turned off and then the power cord is unplugged.

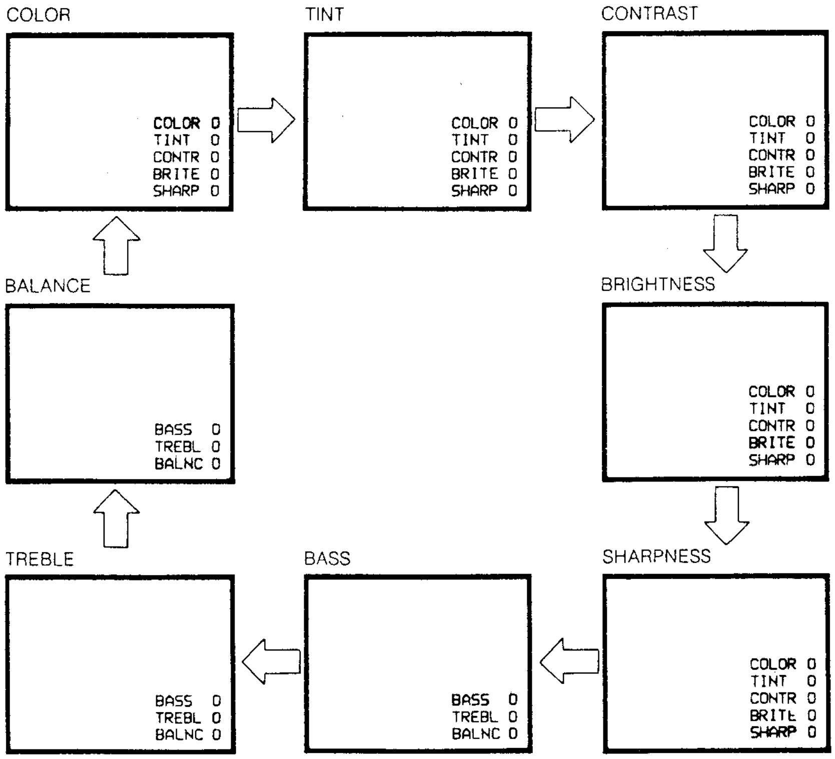
- These picture and sound quality settings can be stored in the AV MEMORY preset memory. See AV MEMORY on page 23.
- To return to the standard settings initially set at the factory, simply press the STD/AV MEM key so that the screen shows STD.

NOTE:

- *The Projection Monitor has been adjusted before shipping. Please make additional adjustments to suit your personal taste.*


PICTURE/SOUND key
STD/AV MEM key
ADJ keys
STD/
AV MEM
PICTURE/
SOUND
◄ ADJ ►
CU-SD023

SCREEN INDICATIONS FOR PICTURE AND SOUND ADJUSTMENT (Selected item is displayed in red.)


COLOR
TINT
CONTRAST
BRIGHTNESS
SHARPNESS
BASS
TREBLE
BALANCE
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0
BASS 0
TREBL 0
BALNC 0

NOTE:

- *If the color seems abnormal but can not be fixed by color or tint adjustment, then you may need to align the color convergence (See page 16).*

AV MEMORY

After making adjustments, you can store your picture and tone quality settings in the two AV MEMORY presets. Follow the procedure below.

Storing a Setting

1. Watch a TV show, video tape, or video disc.
2. Adjust the picture and tone by using the PICTURE/SOUND key and ADJ keys.
3. Turn on the MENU ON/OFF button, and press the MENU SELECT button so that the AV MEMORY display turns red.
4. Press the MENU SET button.
5. Press the MENU SELECT button to select the AV memory (AV MEMORY 1 or AV MEMORY 2) in which the setting is to be stored. The selected AV memory is displayed in red.
6. Press the MENU SET button to store the settings in AV memory. Upon completion of memory storage, "PROGRAMMED" appears on the screen.
7. Press the MENU ON/OFF button twice (or once) to return to normal operation.

Recalling a Setting

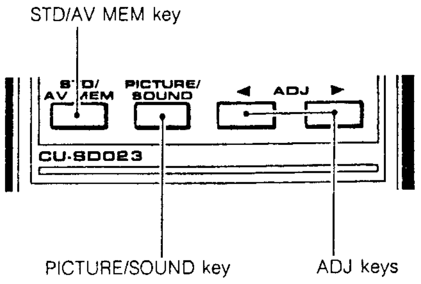
Press the STD/AV MEM key on the remote control unit. Each press of the STD/AV MEM key moves the selection from STD to AV MEMORY 1, to AV MEMORY 2 and then back around to STD again. (Press the key while the previous legend is still on the screen. Otherwise, it will return to the STD setting.)

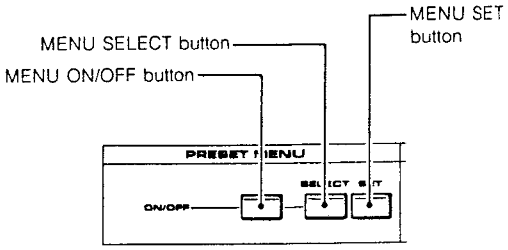
Returning to the Standard Setting

Press the STD/AV MEM key so that the screen shows STD.

NOTE:

- *The balance setting cannot be stored in AV MEMORY preset.*
- *AV Memory settings do not affect the signals sent out from the Projection Monitor's output jacks.*





DPO ADJUSTMENT

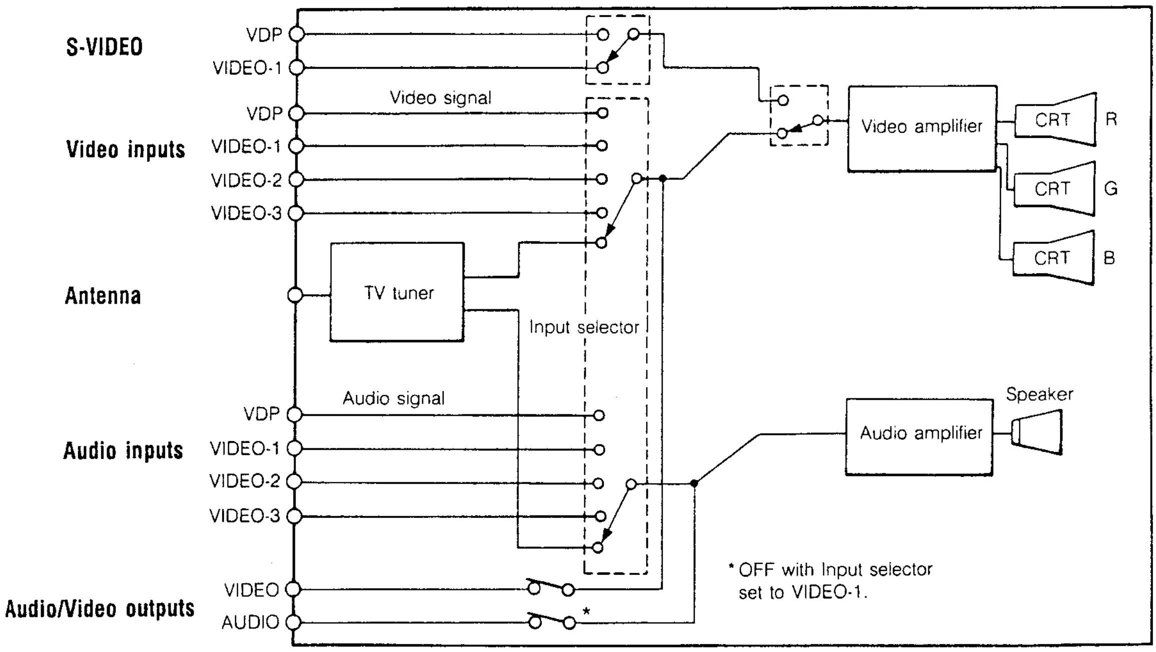
When the DPO (Dynamic Picture Optimizer) switch is on, the monitor automatically adjusts the contrast, brightness and color to match room lighting conditions. This is done according to factory preset specifications which ordinarily do not need to be changed. However, if the DPO is giving you too bright a picture under dim lighting conditions, you can change its response by following these directions.

1. Under dim room lighting, watch a TV show, video tape, or video disc.
2. Use the PICTURE/SOUND key and ADJ keys to adjust the color, contrast, and brightness.
3. Turn on the MENU ON/OFF button and press the MENU SELECT button so that the AV MEMORY display turns red.
4. Press the MENU SET button. "AV MEMORY 1," "AV MEMORY 2," and "DPO BASE" appear on the screen.
5. Press the MENU SELECT button so that "DPO BASE" turns red.
6. Press the MENU SET button to store the DPO setting.
7. Press the MENU ON/OFF button twice (or once) to return to normal operation.

Now when DPO is on, it will reproduce your setting under dim lighting conditions.

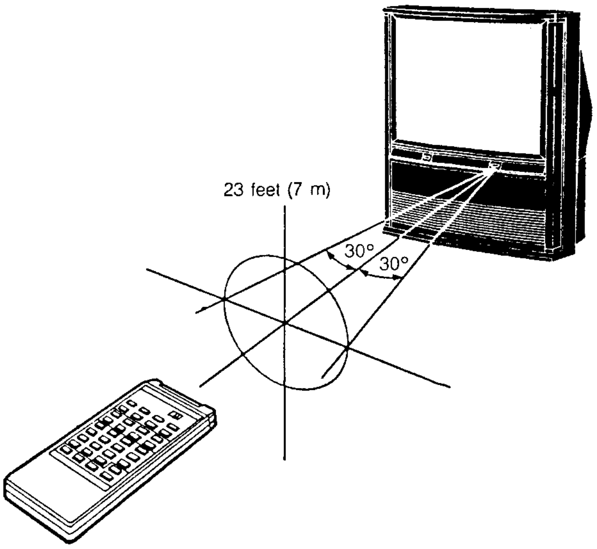
NOTE:
If you adjust the picture quality while the DPO switch is turned on, the DPO function is automatically turned off.

BLOCK DIAGRAM


S-VIDEO
VDP
VIDEO-1
Video signal
Video inputs
VDP
VIDEO-1
VIDEO-2
VIDEO-3
Video amplifier
CRT
R
CRT
G
CRT
B
Antenna
TV tuner
Input selector
Audio signal
Audio inputs
VDP
VIDEO-1
VIDEO-2
VIDEO-3
Audio amplifier
Speaker
Audio/Video outputs
VIDEO
AUDIO
*
* OFF with Input selector set to VIDEO-1.

REMOTE CONTROL OPERATION RANGE

- Point the remote control unit toward the front of the Projection Monitor when you press any of the control keys.
- The remote control unit should be effective at distances of up to about 23 feet (7 meters) from the Projection Monitor and at angles of up to about 30 degrees from a line perpendicular to the front panel.
- Furniture and other obstacles may block the infrared light beam so that it cannot reach the sensor on the Projection Monitor's front panel.
- If there is no response even when the remote control is used directly in front of the Projection Monitor, the alkaline dry cell batteries may need replacement. (See page 7.)


23 feet (7 m)
30°
30°

TROUBLESHOOTING

Please check the following chart and try the suggested solutions before consulting a PIONEER authorized service center.
Often you can fix the problem by making a simple adjustment on the Projection Monitor. Faulty connections may be to blame. Or it may be another piece of equipment that is causing the trouble.

SYMPTOM	POSSIBLE CAUSE AND SUGGESTED SOLUTION
NO PICTURE	AC power cord is not plugged into the wall socket. **Plug in the AC power cord.** Power switch is off. **Turn on the power switch on the Projection Monitor. Or turn on the TV POWER key on the remote control unit.** Selected video signal source is not connected to input jacks, or source unit (VCR, etc.) is not turned on or is not providing a signal. **Check connections and source unit operation.**
COLOR IS WASHED OUT	Color value is too low. **Use PICTURE/SOUND key and ADJ keys to increase COLOR value.** Brightness value is too high. **Use PICTURE/SOUND key and ADJ keys to reduce BRIGHT value.**
COLOR TINT IS WRONG	Tint value is too high or low. **Use PICTURE/SOUND key and ADJ keys to adjust TINT value.**
STATIC IN TV PICTURE	Interference from motor vehicles, neon signs, etc. **Try changing the height or direction of the TV antenna. Move the antenna away from the source of interference.**
GHOSTING ON SCREEN	This "multipath" distortion is caused when the TV signal is received along two paths directly and after being reflected from tall buildings, mountains or other obstacles. Strong winds may have changed the direction of the TV antenna. **Try changing the height or direction of the antenna. An antenna with better directional characteristics may be required.**
COLORED STRIPES ON SCREEN	Interference from other radio or TV signals. **Try changing the height or direction of the antenna. Try changing to a coaxial antenna cable. Coaxial cable is shielded to minimize pickup of interfering signals.**
COLORED EDGES ON IMAGES	Color convergence needs adjustment. **Tune in a channel, select CONVERGENCE from among the menu items and adjust by using the convergence controls on the remote control unit. (See page 16 for details.)**
UNCLEAR PICTURE	Connections are loose or cables are damaged. **Check connections and try using new cables.** Antenna may be damaged. **Check antenna.**
POOR PICTURE OR COLOR QUALITY	Interference from a nearby speaker or other source of magnetism. **Move source of interference away from the monitor.**
NO SOUND	Rear panel SPEAKER SELECTOR is set to EXT, but external speakers are not connected. **Set selector to INT.**
NO ON-SCREEN CHANNEL OR OTHER DISPLAY; SLEEP TIMER DOESN'T OPERATE	Strong light striking the remote control sensor may cause the internal microcomputer to malfunction. **Change the position of the Projection Monitor or the change the lighting so that the sensor is not exposed to strong light sources.**

- With some VCR, when the VCR is not in play mode, the screen sometimes fluctuates. This is not a mal function.

CARE OF YOUR PROJECTION MONITOR

DO NOT:

- Do not use strong cleansers, solvents, polishes, or chemically treated cloths to clean the screen or cabinet.
- Do not touch or scratch the screen.
- Do not fasten or place rubber or vinyl items on the monitor.
- Do not use tape on the monitor.
- Do not put any object on the monitor.

DO:

- Use a soft cloth to dust the screen and cabinet.
- If necessary, unplug the monitor and wipe with a soft cloth moistened with warm water (and mild soap if dirt has built up). Dry with a soft, dry cloth.
- Treat the screen with care to avoid scratches or damage.
- Ask your local dealer to clean the interior of the monitor if maximum picture brightness decreases. This may be caused by dust build-up inside.

SPECIFICATIONS

DISPLAY SECTION

Reception system .... American TV standard NTSC system
Screen size .... 40"
CRT .... 7" CRT x 3
Brightness (White peak) .... 460 Foot-Lambert
[100% Window signal input contrast, bright Max.]
Actual viewing angle .... Horizontal H = 140°
Vertical V = 60°
Horizontal resolution
650 lines
[Input digital test pattern (900 lines resolution)]
Input terminals .... 4 video input systems,
S (VIDEO) input jack (Y/C separate INPUT) x 2
4 audio input systems
Output terminals .... Video output,
audio output (recording)
System remote control terminal .... OUT
Input signal .... Video signal: 1.0Vp-p ±0.2V
(75 ohms load)
Audio signal: 500mVrms
Input impedance .... Video input: 75 ohms ±10%
Audio input: 50 k ohms or more
Input signal polarity .... Synchronized negative
Output terminal signal ratings:
Output terminals (except VIDEO 1) ....
Video signal: 1Vp-p (75 ohms load)
Audio signal: 500mVrms (100% modulation)
Output impedance .... Video output: 75 ohms ±10%
Audio output: 15 kohms or more
Audio output terminal .... Audio signal: 500mVrms
(VARIABLE) (100% modulation Volume MAX.)

TUNER SECTION

Circuit type .... Video signal detection:
PLL full synchronous detection
PLL Digital Synthesizer system
Audio multiplex: BTSC system
Reception channels ....
VHF; CH2~CH13, UHF; CH14~CH69
CATV (STANDARD, AIR or HRC switchable)
CATV A-6 CH~CCC (W+29) CH
Antenna terminal ....
ANTENNA terminal, 75 ohms UNBAL, F-type connector
(VHF, UHF MIXED)

AMPLIFIER SECTION

Effective output (both channels driven)
10W + 10W (THD. 1% 50Hz to 15,000Hz, 8 ohms)
Tone control: BASS .... +8dB, −10dB (100Hz)
TREBLE .... +8dB, −10dB (10kHz)
Built-in speaker system .. 16cm (6-1/2in) mid-low range x 2
4 cm (1-9/16in) high range x 2
External speaker impedance .... 8 ~ 16 ohms

ELECTRICAL SECTION, MISCELLANEOUS

Power requirements .... AC 120V, 60Hz
Power consumption .... 255 W
External dimensions ...... 1031 (W) x 615 (D) x 1183 (H) mm
40-9/16 (W) x 24-3/16 (D) x 46-9/16 (H) inch
Weight of main unit .... 64 kg (141 lb 2 oz)

ACCESSORIES

Operating instructions 1
Warranty card 1
Remote control unit 1
UM-4, "AAA" size (IEC R03 1.5V) Dry cell batteries 2
Important Safeguards card 1

NOTE:
Specifications and design subject to possible modifications without notice due to improvements.